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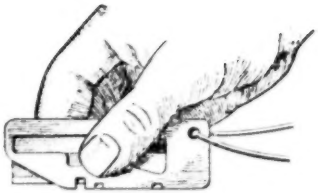

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The **Farmer's Digest**

Volume 21 **January 1958** **Number 7**

Farm Prospects for 1958

Here's a commodity by commodity preview, with some pointers on what you can do to make the most of it . . .

Condensed from Farm Journal

Claude W. Gifford

FARM income for 1957 will go up for the second year in a row, and farmers can expect to make about the same amount of money in 1958 as they did this year.

Prospects in '58 for your own area or for the farm commodities that you raise may be better than this national picture—or perhaps not as good.

But according to USDA figures, farmers in 1957 will clear between $12.1 and $12.3 billion on their farm business. That's slightly higher than in 1956—and '56 was up from 1955's $11.6 billion realized net farm income.

Except for the war period, this is the first time in 20 years that farm income has gone up two years in a row.

Here's What USDA Economists Look for in 1958:

● Continued strong demand for farm goods from an industrial economy marked by high employment, full lunch pails and busting-at-the-seams growth in population. About 3 million more people are sliding their chairs up to the table each year—a gain of more than 8,000 every day of the year.

● Farm prices — which are about 3% higher than in 1956

Reprinted by permission from Farm Journal, Philadelphia, Pennsylvania

— are expected to continue at about this level through 1958. Since farmers are expected to market even more in '58, they'll take in more money than in 1957. But rising production costs (up 3½% in 1957) will leave them with about the same amount of money as they had in '57. That's from farming only.

● Off-farm income earned by farm people — *which now accounts for more than 40% of total farm income*—will rise further in 1958. How much will depend on general employment conditions. Farmers' off-farm income will likely come to more than $8 billion this year. When added to net farm income from all other sources, it would bring the 1957 farm take to more than $20 billion.

● The long-time trend toward fewer farms and fewer farmers will continue in 1958—*with income per farm and per farmer averaging above 1957.*

● Farmers are expected to pocket 40 cents out of each retail dollar spent for food in 1958, which is about the same as this year.

As national income went up in '57, people continued to spend about one-fourth of their incomes for food. But most of this increase was gobbled up by increased processing and marketing costs.

Food costs in late '57 have been running 4% higher than a year ago—75% of that increase is accounted for by higher marketing charges. Farmers got little of it.

What about the farm outlook beyond 1958? Administration officials are worried about the tremendous supplies of feed grains and the possibility that they might stimulate a sizable rise in livestock and poultry production with lower prices for some farmers.

You'll find several well-informed experts who'll say that we can't expect substantial improvement in farm income in the next two to five years unless we find some way to curb the feed grain output. The crop this year is 10 million tons larger than we will get used; the carry-over next October is likely to be 57 million tons. Three main reasons for the problem: shifting land from allotment crops to feed grains; higher yields per acre; and better livestock feed efficiency.

The slow-down of the nation's over-all economy is temporary and isn't likely to hurt the demand for farm products for the foreseeable future, economists believe.

Why haven't farm prices kept up with the growing national economy? There are at least three reasons:

1. While the economy has been expanding at amazing rates, farm output has been even more amazing. Demand for farm goods simply hasn't kept up with production.

2. Farm costs are going up faster than farm returns.

Farmers in 1956 took in $34.4 billion gross—down only $0.2 billion from 1948 despite an 18% drop in farm prices from the record highs of eight years ago. But 1956 farm costs are $3.6 billion higher than in 1948—thus realized net farm income is down $3.8 billion.

3. People are paying more for food as their incomes have gone up. But farmers don't see much of it. People spent $47.7 billion in 1956 for food—up $8.8 billion from the $38.9 billion they spent in 1950. But processing and marketing costs ate up $7.7 billion of the increase.

Farmers collected only $18.8 billion of the $47.7 billion—up only $1.1 billion from their $17.7 billion in 1950.

Now here's a look ahead at the '58 prospects for several of the major agricultural products.

Dairy

Supplies: Farmers increased milk output in '57 for the sixth consecutive year — and will no doubt set a new record in 1958. About 4% to 5% fewer farmers are keeping cows each year; those who do are increasing their herd size. Net result: About 1% fewer cows per year; constantly rising output per cow.

Experiments have proven that trees used as windbreaks can reduce fuel costs as much as 22 per cent.

The government bought up about 5% of the 127-billion pound output in 1957—a fifth more than in 1955 and 1956. Supplies will exceed demand again in 1958. The baby boom gives us more milk deliveries every year, but the per capita use of milk in all forms has dropped from 802 pounds in 1935-39 to 705 pounds this year.

Outlook: Dairymen will very likely take in a record amount of cash in '58—and their net may go up too, since feed costs will be low. The level at which support rates are set on April 1 will greatly influence '58 prices. If supports don't change, prices won't change much either—with an outside chance that fluid prices may increase slightly.

What to do: Good chance to save money in '58 by juggling rations to use the cheapest feeds. Short-time decisions can't help much in one year—dairying is a

long-time business. Those in it must gird for the long pull. Things to shoot for: A good fluid milk outlet, a high fall output base, getting large enough to afford labor-saving equipment.

The U. S. Government now owns about 20,000 tons of gold—most of which is buried at Ft. Knox, Ky.

Beef

Supplies: Numbers started declining in 1956, continued thru '57, and the down-trend will last another year or two. Feeder cattle moved into feed lots later than usual this fall. Since feed is abundant, cattle are likely to be fed heavier, come to market later.

Outlook: Generally rising prices in '58—and later. Cow and feeder calf prices will climb faster than fat cattle prices. Seasonal low prices on fat stuff probably will be later in 1958. Despite higher prices paid for feeder cattle, 1958 profits from cattle feeding may be average or better, partly due to lower feed costs.

What to do: Avoid making cattle too heavy — discounts for over-weights may be general in 1958. Try to stay off the spring market. Get heavy stuff to market fairly early in the new year. looks like a good year to carry light stuff and finish it out in late summer or fall.

If yours is a range operation, plan it around increasing cow and calf prices for two or more years.

Hogs

Supplies: The '57 fall crop was about 3% larger than the 1956 fall crop. Spring farrowings are expected to run about 7% to 10% ahead of last year.

Outlook: Prices should hold up well through the first half of 1958. But look out for the last half. If that big spring farrowing pans out, fall prices will drop more sharply than usual. Chances are good they won't skid as low as in 1955, however.

What to do: Watch for that Dec. 20 USDA report on spring farrowing intentions. If it's 8% or more above last spring, consider selling bred sows or feeder pigs and feeding your grain to other livestock or storing it under government loan. Go easy on spring farrowings, market early.

Poultry

Supplies: We'll start the new year with 5% fewer layers, and they'll lay slightly fewer eggs than the 61-billion record shelled out in both '56 and '57. Hens will likely do a little better job of laying — increasing their eggs per bird by another 2%, as in each

of the last eight years. Egg eaters aren't doing as well—per capita use of eggs continues to decline.

Outlook: You should get higher egg prices than in 1957. Broilers will average close to 19c a pound (same as this year); turkey prices will go up by the end of the year if expected cuts are made. Gross income from poultry and eggs will exceed this year's $3.2 billion take. Feed costs will be low, so net will go up percentage-wise more than the gross.

What to do: Buy laying-flock chicks early. Don't cull present laying flock too heavily.

For broilers, make the best contract agreement you can wrangle, but don't count on making much of a bonus based on price—except maybe in the summer.

Stick with expected cut-back in turkeys, and plan for higher prices in the last six months of the year.

Hitting the High Spots

Feed grains, burdened by gigantic supplies, will get hit by lower prices. *Wheat* crop is off to an excellent start, preventing any further drop in supplies, and holding prices at the loan level. Supplies of *rice* and *rye* are down. *Fruit* prices through the winter will be down some on strength of larger stocks on hand.

Outlook for *fresh vegetables* is some better. *Potato growers* will do better than last year's low prices. *Sweet potato* returns should be higher too. *Dry edible beans* will be slightly better property than last year; *field peas* a little poorer.

Cotton supplies are considerably smaller.

Flaxseed and *linseed oil* to average slightly higher than the $2.99 per bushel farmers got last year. *Tobacco* output is the smallest since 1943, but carryover is large. *Peanut* prices are likely to hug the support rate.

Narrow Row Spacings Increase Soybean Yields

Where farmers have narrow-row planters and cultivators, they can often get bigger yields of early soybeans by planting the rows closer together, says a University of Minnesota agronomist.

In experiments conducted from 1954-56, yields were greater in rows spaced 24 inches apart than where rows were spaced every 42 inches.

The wider width is most commonly used in Minnesota, because that width is normally used for corn and is the spacing for which most planters and cultivators are designed. —*University of Minn.*

FARM OUTLOOK FOR 1958

Condensed from Michigan Farm Economics

IN SPITE of the probable leveling off or slight decline in business activity during the first half of 1958, wholesale and retail prices will keep rising—but at a slower rate than in 1957. Since different indicators are moving in different directions, the economic future for 1958 is most certain.

Agriculture can look forward to a year much like that of 1957. Any rise in prices received will be largely offset by rising prices for goods and services farmers need in production.

The farm price for corn should range between $1.00 and $1.15 a bushel. Farmers eligible for the full price support should seal their corn under government loan and buy feed as needed.

Cash receipts from dairying in the United States are likely to average about the same in 1958 as in 1957. Milk production will continue to go up. Fluid milk sales per capita will continue at about the 1957 rate. If present production trends continue, it will be hard to keep up the 1957 price level.

Cattle prices will average slightly higher in the first half of 1958 than in early 1957.

Hog production is rising, prices will fall, and the price advantage of early pigs will be greater than usual this summer.

Wool prices will again be supported at a national average price of 62 cents per pound.

Egg prices in the first six months of 1958 will generally average about 10 cents a dozen higher than in the same period in 1957.

Broiler production can be expected to increase 5 per cent in 1958.

Short supplies of both white and soft red winter wheat should help hold prices level during the winter and early spring months.

Reprinted from Michigan Farm Economics

With a smaller potato crop there will be a step up in prices as the marketing season progresses.

55% of our farmers receive 95% of the annual cash farm income.

We should not expect soybean prices to average much, if any, better than the national average loan price of $2.09 per bushel.

Onion storage holds more promise than last year, but storage longer than January 1 has often been unprofitable in large crop years.

In spite of low farm income, farm land prices are likely to continue strong.

Credit agencies will continue to tighten up on lending and interest rates will stay high.

Living costs will continue to rise but at a slower rate than in 1957.

Feed Wastage in the Poultry House

Many poultry raisers throw half of their feed out the door instead of into the chickens. Since feed represents two-thirds of the cost of producing a dozen eggs, this is an important loss, explains T. E. Hartung, Colorado poultry specialist.

Feed wastage can be traced to a number of sources. First is the level to which the feeders are filled. Tests by a national feed company have shown that if you fill the feeder brimful, 45 per cent of all the feed that is put into the chicken house is spilled out and wasted.

If you fill the feeder two-thirds full, 15 per cent of the feed may be lost. If you fill the feeders only half full, five per cent of the feed is wasted; when a feeder is one-third full, there is a two per cent loss. This is a very important item, whether you are feeding laying hens in cages or on the floor.

Another important factor in feed wastage is the height of the feeder in relation to the hens, Hartung says. If the feeder is placed too low, a hen can spill a lot more feed than if the feeder is raised higher. Hartung recommends that the feeder lip be kept at a level equal to the height of the back of the chicken. This will give them sufficient reach so they will get plenty of feed, but still not waste it.

—Colorado State University

You Can Rid Your Farm of Quack

New chemical, dalapon, plus tillage is effective, practical control . . .

Condensed from Prairie Farmer

FEW FARMERS need to be told that quackgrass is one of their most troublesome weeds. Its control has been a serious problem in crop lands.

Quack's extensive network of rhizomes just under the soil surface robs the soil of moisture and fertility, causing slow seed germination and plant growth.

European research indicates that besides taking up moisture and plant food, quackgrass may be producing substances that are harmful to the growing plant.

Until recently the most effective way to control quackgrass was shallow plowing followed by continuous spring-tooth harrowing or disking, or summer fallowing for one or two seasons.

During recent years a large chemical company has been working on a herbicide that would effectively control quackgrass. Dalapon appears to be the answer.

Several years of extensive tests have shown that dalapon can be applied from Sept. 1 through Nov. 15 in central and southern Michigan with success. Spring applications have also showed success.

20 Pounds Per Acre

A single application of 10 pounds of dalapon in 25 to 40 gallons of water is a suggested practical treatment if a boom spray is used. Rates up to 20 pounds per acre have given greater control and rates under 10 pounds have had a lesser effect. The 10-pound application on mineral soils has been effective.

Regardless of the dosages or methods of application, it is important that the grass be thoroughly covered. The grass should be at least 6 inches tall and actively growing when treated.

If an established sod is to be treated it will generally be advantageous to till the sod or mow and wait for the growth to start before spraying. Treatment of quackgrass after an early-harvested crop has generally given good control.

Reprinted by permission from Prairie Farmer, 1230 Washington Blvd., Chicago 7, Illinois

Dalapon breaks down rapidly in warm, moist soil but can remain over winter following middle or late fall application when soil temperatures are comparatively low. Consider this fact and also the dalapon tolerance of the crop to follow in determining the time and rate of application.

Where corn or another crop of limited tolerance is to be planted of quackgrass. A week after application, he plowed the quackgrass and then planted late potatoes. This fall you will have a hard time finding any trace of quackgrass.

GUIDE TO DALAPON APPLICATION FOR QUACKGRASS CONTROL

Crops to Be Planted	Time of Application	Dalapon Rate in Lbs. Per Acre*	Time of Plowing Or Other Tillage
Alfalfa, Peas, Oats, Clover	Sept. 1 - Oct. 15	10	Fall or spring.
Barley Corn, Beans	Sept. 1 - Oct. 1	10	Fall or spring.
Corn, Beans	April 1 - May 1	5-6	3-4 days after application. Don't plant crop for at least a month after plowing.
Sugar Beets or Potatoes	Sept. 1 - Nov. 15 April 1 - June 1	10 5-6	3-4 days after application. Planting may be done immediately after plowing.
Crops of unknown tolerance to dalapon	Sept. 1 - Oct. 1	10	Fall or spring.

* Should be applied in 25 - 40 gallons of water per acre.

Beets and potatoes are very tolerant to dalapon. Oats, alfalfa, peas, birdsfoot trefoil, and clover are moderately tolerant. Beans, corn, strawberries, and barley are sensitive to it.

Evidence shows that split application in the fall gives better control than a single treatment.

A potato grower applied 5 lbs. of dalapon per acre early last April to a well-established stand after a spring application, allow at least a month between treatment and planting time, giving the dalapon a chance to decompose in the soil. Sugar beets need only 3 or 4 days' wait.

It should be pointed out that chemical treatment usually will not give complete quackgrass control because of the vigorous and rapid growth of this weed. But dalapon weakens the plant so that timely plowing in spring or

fall and a good job of cultivating in subsequent crops will greatly reduce quackgrass damage.

Some termites are thought to live as long as 30 years.

Scattered patches of quackgrass can be treated with a sprayer using 1 pound of dalapon in 10 gallons of water. Such patches on a farm have a habit of spreading.

Fence-row quackgrass can also be brought under control with a good spray program. Grass around apple trees is good mouse cover. Mice then damage the tree trunks. Dalapon kills the quackgrass without apparent damage to the trees.

Cover Crops Maintain Soil Structure

Winter cover crops that reclaim lost plant nutrients, provide organic matter and prevent erosion can also help maintain granular soil structure, says Les Smith, Purdue University extension agronomist. Experiments at the USDA's agricultural research center, Beltsville, Md., have shown that crops planted early in the fall insulate the soil and prevent damage to soil structure by repeated freezing and thawing.

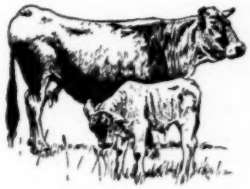
Recommended cover crops include rye and other cereals and rye grass. They may be used singly or in combination, depending on local conditions.

Although repeated freezing and thawing during the winter may improve soil by breaking up clods, these forces are frequently detrimental to soil-aggregate structure (clustering of fine soil particles) under certain field conditions. Smith points out that the protective insulation provided by vegetation reduces the number of times a soil freezes during the winter and the depth to which frost penetrates.

Cover crops also promote and help to maintain large populations of earthworms and other earth-boring organisms, which increase infiltration and speed up drainage of excess water from the surface soil.

Freezing and thawing on unprotected fields causes slumping of the soil granules when they become wet. This condition leads to surface puddling, followed by crusting and cracking as the soil dries out in the spring, according to Smith. —*Illinois Extension*

How To Give Freshening Cows A Helping Hand



Wisconsin dairymen tell what they do before and after calving time . . .

Condensed from
Wisconsin Agriculturist & Farmer

EXTRA care at calving time may save a calf for future production. And just as important, what you do may make a difference on how the dam produces in her following lactation.

Every once in a while a cow's poor production can be traced to trouble she had calving.

The first step, of course, is to have accurate breeding records. You should know about when the cow is ready to calve. But even with records you have to keep an eye on the cow and watch for calving signs.

Gestation Period May Vary

Normal gestation is 282 to 283 days, but there are a lot of reasons why a cow runs over or freshens earlier. Age of a cow, inheritance or even breed, makes a difference.

When a cow appears due to calve, get her into a box stall with plenty of clean dry bedding. Good clean straw is your best bet.

"I do most of my bedding with sawdust but for a cow freshening I use straw," says William Pointer, Richland county, Wisconsin, farmer.

"I've heard that sawdust can get in the nose of the new-born calf and stop it from breathing."

What are some of the signs of approaching calving?

Pointer says that he usually feels the cow at the tailhead. If it is beginning to get soft he figures that this is the time to put the cow in the box stall.

In parts of Alaska temperature ranges as widely as 170 degrees in a year—from 100° in summer to -70° in winter.

There are other signs too. For example, when a cow starts to bag up she usually isn't too far off. But this doesn't work for all cows. Age makes a difference. Sometimes a heifer will bag up a couple of months before freshening.

Reprinted by permission from Wisconsin Agriculturist and Farmer, Racine, Wisconsin

Bagging up is a sign that's important more with an older cow. And especially with a cow that has a history of freshening soon after bagging.

Another good sign is restlessness. When the cow starts stomping around, switching her tail and acting generally pretty nervous you know that her time is close by. Better get her into her box stall as soon as possible.

A farmer who had been staying at a fashionable hotel was paying his bill. He looked up at the girl cashier and asked what it was she had around her neck.

"A ribbon, of course," she answered. "Why?"

"Well," he replied. "Everything else around here is so high that I thought perhaps it was your garter."

From Montreal Star

If at all possible, be around at calving time. Leave her alone but be near just in case. Don't rush calving but be sure you are prepared if she should have trouble.

Roland Goecke, Manitowoc county, says he checks to see if the cow needs help with her calving. He first checks to see if the calf is turned right.

If the cow is having trouble he ties one end of a rope to the calf and the other to a post. Then he helps the calf's arrival by putting his weight on the rope.

"You can get enough pressure this way," says Goecke. "I'd be afraid to use any more. Even with this amount of pressure you have to be careful."

Some farmers use everything from a block and tackle to a wire stretcher. However, any pulling should be done slowly and easily.

If Cow Has Trouble

If you think that the cow is going to have a great deal of trouble in delivering the calf, or if labor continues more than an hour, call your veterinarian.

The new born calf needs special care. Make sure that all fetal membranes are removed from the calf's mouth and nostrils. Paint the navel cord with iodine.

The cow should have warm water to drink. Cold water may disturb her digestive system. Some old timers believe that a warm bran mash fed to the cow helps. They point out that many farmers have given up this practice and have run into more and more calving troubles.

Farmers now buy an average of three times as much machinery, equipment and motor vehicles as they did between '35 and '39. Dollar-wise, expenses per farm for feed, fertilizer and petroleum fuel have more than tripled!

10 Points for Good Ewe Care

Use this check list to get a good lamb crop . . .

Condensed from Tennessee Farmer

PROFITS earned from lambs next summer will depend to a great extent on the management of the ewe flock this winter. Here is a ten-point plan for sheepmen to follow in feeding and managing their flocks during the cold months.

1. Top quality legume or mixed legume-grass hay is the basis for a good winter ration. Satisfactory results have been obtained from good quality legume silage. High quality roughage makes for healthy and strong lambs at birth.

2. Winter pasture, such as bluegrass, brome, fescue, rye or winter wheat is a natural and excellent feed for ewes. Pasture not only gives ewes needed exercise but helps keep the sheep barn clean.

3. Each ewe in the flock should gain from 20 to 35 pounds, mostly during the latter part of the gestation period. Remember that lambs are fed for about five months before they are born.

4. Most sheepmen feed from one-half to one pound of grain—such as corn or oats—per ewe each day from a month to six weeks before lambing.

The Commodity Credit Corporation will continue to use the bushel, rather than the hundredweight, as a measure in handling next year's CCC grain operations.

5. Tag the ewes. Shear the heads of "wool blind" sheep and keep them clean—a "wool blind" sheep is helpless.

6. Trim the feet of the ewes at the beginning of the gestation period. Avoid muddy sheep pens and lots. Foot trouble in sheep is usually caused by neglect.

7. Keep rams away from ewes during the winter. Avoid narrow gates or high sills that the ewes must jump. Provide enough

Reprinted by permission from The Tennessee Farmer, 1529 Demonbreun, Nashville, Tennessee

grain trough space for each ewe. Arrange troughs so that the ewes can get to all easily. Many lambs can be saved by not crowding the heavy, pregnant ewe.

The average fish can eat from 1/2 to 2/3 of its weight in a day.

8. Provide loose salt at all times. A good mineral mixture consists of two parts of bonemeal and one part of loose iodized salt.

9. Provide fresh clean water at all times.

10. Beware of pasturing the ewe flock in corn fields. There is often too much corn. The roughage is too coarse and too low grade to produce strong, healthy lambs.

Key to Good Fences

The key to good fencing is well braced end and corner posts, says T. C. Skinner, Florida agricultural engineer. These units must withstand wire stretching, expansion and contraction and animal pressures. One of the best and most efficient types of braces is the double span and brace.

Mr. Skinner says that depth of setting the corner posts is important too. Tests show that posts set 3′-6″ deep instead of 2′-6″ (standard) increase the holding power as much as 90 per cent, especially in sandy type soils.

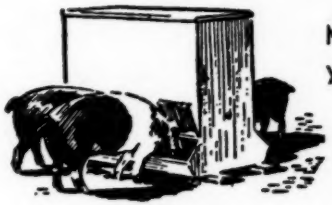
Depth of setting line posts depends on height of the fence. They should be deep enough to balance the fence. A 6′-7″ or 7′-0″ foot post should be set at least 2′-6″ in the ground.

The common spacing of line posts at 16½ feet, Mr. Skinner says is too far. A spacing of 12 feet is much better. In a continuous long run of fence he recommends installing double span brace posts every 40 rods. This is essential as they take the strain off line posts.

In fastening the wire to the line posts, do not drive staples too tight against the wire, but leave them so the strands are loose enough to slip back and forth through the staple eye. In the case of corner and braced line posts, drive them in tight.

There is no short, easy method of fence maintenance, says Skinner, but the time and labor involved in doing a good job will be well worth while. *—Florida Extension*

He Makes Raising Hogs Full Time Job



Milo Nessa specializes in hogs and makes year-round use of his time and equipment.

Condensed from Successful Farming

Wayne Messerly

MANY farmers say it is impossible to make a living off 120 acres. It may be unless you specialize.

Milo Nessa, Hamilton County, Iowa, specializes in meat-type hogs. Every year he produces over 60 tons of pork with only one week's hired help. Yet, he has time to take an annual vacation with his family and an occasional day off for both business and pleasure trips.

Now, a producer has to have a factory. Nessa's factory is his 120-acre farm . . . a factory that's working 365 days out of the year to make him a profit by turning out a superior product . . . meat-type hogs.

Nessa reasons that with a scarcity of land, few farmers can afford to expand horizontally. But you can expand *vertically.* In other words, increase your volume of production . . . raise more hogs . . . just as cheaply and as efficiently as you know how. By doing this, the small, efficient swine operation *can* successfully compete with the large commercial operation.

Remember the inefficient factory has to close down and lock its doors. Sooner or later the inefficient farmer must fold, too. But there are successful small factories as well as large. Simply because you're a small farmer doesn't mean you have to quit. Vertical expansion may be your solution to increased farm income.

Here are the seven important management factors which enable Nessa to make his swine factory pay off on 120 acres: Multiple farrowing, efficient feeding, moderate capital investment, selective marketing, selective breeding, effective disease control, and applying research.

Multiple Farrowing

Nessa farrows 75 sows and gilts in a 5-time-a-year program. Sows

Reprinted by permission from Successful Farming, Des Moines, Iowa

and gilts are divided into five groups. Group 1 of 20 sows is bred the last week of August to farrow the third and fourth weeks of December. Group 2 of 10 sows and 10 gilts is bred the second week of October to farrow the last of January and first of February. Group 3 is 15 gilts bred the last of February and first of March to farrow in June. Group 4, 19 gilts, is bred in March and April to farrow in July. Group 5 is 10 gilts bred in April and May to farrow in August.

Idaho originated the practice of dropping beavers from planes in isolated regions, to build dams to regulate flow of streams. Believe it or not, it works.

In the spring of 1956 his average litter farrowed was 11.2 pigs and his average litter weaned for all 5 groups is better than 8. He credits farrowing stalls for giving him higher livability. Continuous ear-marking of sows and litters also helps boost litter size. Replacement gilts are always kept from large litters.

Multiple farrowing does 4 important things for Nessa: (1) It distributes his work load throughout the year; (2) it distributes his income and gives him a better chance to hit high markets; (3) it utilizes his swine equipment throughout the year, not for just 2 or 3 months; and (4) it enables him to get a greater volume of production.

Nessa began developing his multiple farrowing program in 1948. Up to then he had a diversified livestock program of 175 hogs a year, 15 dairy cows, and a few feeder cattle. This is why he changed.

"Before I took up farming," says Milo, "I drove a truck. I liked farming better, but I got to wondering why I wasn't getting anywhere. Thinking it over I realized that trucking was a year-around job—farming wasn't keeping me busy in the winter. So I decided to specialize in hogs and raise enough to keep me busy the year around. It was the best move I ever made."

Nessa maintains a shipping room where pigs about ready for market are brought and held. If the weather takes a turn for the worse, he has his pigs ready to ship on a half-hour's notice. This practice nets him a good many extra dollars every year.

Efficient Feeding

Nessa follows the life cycle feeding system developed by Iowa State College swine nutritionists. It has given him excellent results. His feed conversion ratio is a pound of gain for every 3.45 pounds of feed.

In 1955 a controlled feeding experiment was conducted on Nessa's farm with 150 pigs. The purpose was to observe the effects of feeding various levels of antibiotics. The pigs averaged 26 pounds at the start of the experiment and were marketed at 208.2 pounds. Their average daily gain was 1.28 pounds in dry lot and 1.72 pounds on pasture, with an average of 1.48 for both periods. The pigs required daily feeding of 4.91 pounds and their feed conversion per 100 pounds of feed was 3.33. Milo's cost of producing 100 pounds of pork is $9.32.

Nessa has learned 4 more important principles about swine feeding:

1. Swine nutritionists at farm colleges are an excellent source of information.

2. Bulk feeding is the most economical way of feeding because of the savings in labor and time. Nessa gets 5 tons of feed delivered a week for a hauling charge of $1.40. "If I had to haul it myself it would take me three trips to town and a half-day's time, or about seven times the cost. A bulk deliveryman is the cheapest hired hand you can get."

3. Divorce farm-grown grain from feeding program. Milo feeds his oats, but seals or sells his corn and soybeans. Except for the oats, all feed is bulk purchased independent from the farm. This method guarantees the keeping of accurate feed records, with his feed bill in 1955 exceeding $14,000.

4. Use outside feeding floors for sows which are farrowing in stalls. "I can't emphasize this enough. Regardless of the weather, I make my sows get outside for an hour morning and night. They need the exercise and this permits bulk feeding."

The United States Armed Services owns or leases 24,173,000 acres in the United States, and 5,255,000 more acres overseas — the total area exceeds the size of Ohio or Tennessee.

Moderate Capital Investment

Nessa has only a moderate investment in equipment and keeps it in use because of multiple farrowing. His most expensive item is a $4,000 farrowing house. Total cost of all equipment is $7,950.

Equipment is designed to save labor. A good example of how he gets double use of his equipment is a 16'x24' portable wooden feeding floor. In the winter it is used to bulk-feed nursing sows. In the summer, it is used to make sunshades.

Selective Marketing

Thanks to multiple farrowing, Nessa does a good job of hitting top markets. He keeps a marketing room in his barns. Even though he winters sows and gilts and market hogs outdoors, he always has a few ready for market and usually sells 10 to 20 every 2 weeks. Because his farm is readily accessible to the highway and because the buyers know he usually has hogs ready for market, Nessa is often asked to deliver—for a premium—when stormy winter weather holds down regular marketing.

The Ford Motor Company almost became part of General Motors in 1908—Ford offered to sell for $8 million, but General Motors couldn't raise the cash.

His trump card, however, is selling on grade and yield which grosses him a $1,000 extra profit a year. Even his sows are sold on grade and yield! Dressing percentage of his hogs runs about 2 to 3 per cent above average and at the 1956 Midwest Barrow Show at Austin, Nessa's barrows placed fourth in the carcass contest. His grade and yield figures let him know whether or not his present boar is improving the meat-type qualities of his hogs.

Selective Breeding

Nessa buys the best boar he can get. Not only that, he gets it early enough in the fall so he has his pick, even though this means an extra-long feeding period before the boar is put to use.

Many farmers who try multiple farrowing get discouraged on how to keep a breeding schedule. Nessa controls this by an extra-long nursing period for summer pigs. Then, when it's time to breed for his spring pigs, he picks 3 sows at random from the pasture. The 3 sows are taken from their pigs and let in with the boar at the barn lot. Within 3 days they come in heat and are bred.

A new lot of 3 sows is transported up every night in a combination loading chute-carrier until all the sows have been bred. This system also means using only one boar, so consequently, he can afford a more expensive boar.

This chart shows Nessa's 4-way cross-breeding program.

Boar Rotation Program

Breed	Chosen for
1st year—Poland China	Bone structure
2nd year—Montan	Length and good backs
3rd year—Duroc	Bone structure (wants a rangy one)
4th year—Landrace	Length and good back

Effective Disease Control

Nessa follows the standard disease-control practices, but goes one better when it comes to cleaning and disinfecting his farrowing stalls and pens. Nessa pens, stalls, gates, and supports for both barns are entirely removable. This permits thorough scrubbing of every crack and corner and best of all, the lumber can actually be dipped into a disinfectant.

Applying Research

By this Nessa means keeping informed and applying the latest swine management findings. Because he specializes, he finds time to take field trips, read new literature, and visit with research men at Iowa State College, which is just a short drive from his farm.

These are only a few of the more important management practices that Nessa applies. Some of them may work for you and others may not fit your situation. Although Nessa has had 8 years experience with multiple farrowing, he would be the first to admit that he still has much to learn. The important thing is that he is willing to try new methods and learn from his experiences and those of others.

Mistakes Costly in Septic Tank Care

Some of the ideas about septic tanks cost farm families considerable money each year.

For instance, it is not true that the liquid coming from a septic tank is pure — the effluent from a tank will be more contaminated than the material going in. This should not be discharged into a stream, road ditch, or underground water table, warns W. T. Welchert, agricultural engineer for the University of Arizona. The best place for the septic tank discharge is into the top layers of the soil where bacteria break it down. Tile lines laid about two to three feet deep usually give better absorption than seepage pits.

Another fallacy about septic tanks is the belief that their capacity can be "stretched" by running wash water around the tank. This is only inviting trouble — soaps tend to clog the seepage lines. Get a tank that is large enough in the first place and run all wastes into it.

Don't make the mistake of waiting until the septic tank quits working to check it. The level of the sludge deposits in the bottom of the tank should be checked every year and removed when the tank is one-third full. This can be checked by a probe through an inspection hole left for this purpose. —*University of Arizona*

It Pays To Fit and Show

No herd is too small if your cattle are good enough to hold their own . . .

Condensed from
The American Hereford Journal

C. E. Hellbusch

FITTING and showing purebred cattle can be of real help to the smaller breeders of the country, proof of which may be found in such operations as those of Sellman Bros., Watrous, New Mexico.

Marshall and Dick Sellman own 125 head of registered Hereford cows and a very workable ranch outfit located along the Mora River, four miles east of Watrous. They started in 1946 with just a few registered cows and a herd bull, Advance Domino Mischief 1st. They gradually increased the size of their herd, also building up the quality, and, despite a serious drouth that has hung on for four years, they have been able to keep their outfit going.

"Just as soon as our quality justified it, we started fitting a few cattle for local and state shows, and when our quality improved to where we felt we could get along all right farther from home, we did it," Dick said recently in talking about the small breeder fitting and showing. Dick is the feeder and fitter of the brother team but either one of the two can readily do the other's work.

Benefits That Come From Showring

The Sellman brothers list the following advantages for the breeder when he exhibits at some shows during the year:

1. It spreads out his contacts with breeders, and it gives people a chance to see and learn about his cattle.

2. It is a method of advertising the breeder's cattle. Shows are really an advertising media.

3. When a breeder is fitting some cattle he is able to present his cattle much better to visitors.

Reprinted by permission from The American Hereford Journal, Kansas City 5, Missouri

Visitors are more impressed with cattle in good condition around the barns.

4. The small breeder should plan to sell the majority of the cattle he fits either at private treaty or in sales. This way he is able to increase his income from his better calves. Even with the feed and fitting bill out, the majority of the fitted animals will bring more than they would if sold in just pasture condition.

Prices continue to go up. The American family now pays $103.60 for what cost $100 a year ago.

The Sellman's have spread their contacts far and wide by showing and selling cattle at the nearby shows. Last year they sold cattle to buyers from 11 states and New Mexico. They figure that 40 per cent of their buyers were registered breeders and 60 per cent were commercial cattlemen.

"We don't plan to follow a show circuit but include in our itinerary the New Mexico State Fair; the Arizona National; National Western at Denver; Southwestern Fat Stock Show at Fort Worth; Amarillo Stock Show; the Lubbock, Tex., show, and the Southwestern Livestock Show at El Paso. This gives registered breeders and commercial producers in a large general area a chance to get acquainted with many more cattlemen than we ever could if we didn't show," Dick said in discussing the points at which Sellman Herefords are exhibited.

Suggestions to First-Time Fitters

Dick volunteered some advice to small and first-time fitters, based upon his hard-earned experience. This advice went like this:

1. The project must be a family affair. This keeps down costs, especially labor costs. It will be more fun for everyone this way. Small breeders can't afford professional feeders and fitters.

2. The beginners will make mistakes, but don't make the same one twice.

3. Get advice and suggestions from experienced breeders and fitters. Learn from the people who are doing it, and you can count on the majority of the successful breeders helping you.

4. You start learning when you take your cattle to your first show. Look and listen and talk to anyone who can help you.

5. Your feeding program should be planned to enable you to get your cattle ready to sell not with the idea foremost in mind to win the grand championship. Since you will be selling the majority of the cattle you fit

and show, you want to take extreme caution not to hurt the future use of the cattle. It is best not to feed too hot a ration (too much corn), and the ration must contain plenty of milk.

Dick went on to say that the cattle must be fed regularly each day, and that they should have some grooming each day. They should be brushed twice a day as show-time approaches, and the cattle should be washed once a week, starting about 60 days before the show opening. They must have their feet trimmed regularly and, of course, this will be a much harder operation if the cattle aren't handled enough to become gentle.

In 1956, the American people paid 101 billion dollars in taxes of all sorts, at all levels. That is $646 a person.

It Pays to Fit the Very Best

Breeders, whether inexperienced or experienced, must always select their tops to go into the fitting barn. If they don't they are wasting their time because it is only the breeder's best production that will show and sell to the best advantage. They must start early with their cattle and take plenty of time. It is very easy to get into trouble if time is short and the cattle are crowded. Feeding troubles can develop and sickness is liable to strike as a result of overfeeding.

The average U. S. meat packer must sell 2½ pounds of meat to make a profit of one penny.

It isn't necessary to have elaborate fitting barns, but a fitting shed or barn should be provided to give shade and protection from the weather. Cattle of various sizes and sexes should be penned together and bedding should be provided at least during the latter part of the feeding period. Exercise lots should be built adjacent to the barns and should be used. Dick turns his cattle out at night for exercise and then keeps them in out of the hot sun during the day. The other necessities include a wash rack, watering tubs, feed buckets, combs, brushes and show halters. These last items are a necessity to have at the shows and a strong, well-constructed tack box should be built so all of these items can be kept in one place under lock and key.

It isn't too early to be thinking about the fall shows of 1958. There is no time like the present to look over show classifications, check entry dates, select your top calves, and roll up your sleeves and go to work. Good Luck.

Small Farmers Get Notice To Quit

An Englishman spent a year in the U. S., went back to give this well-reasoned report. In brief, he believes the future lies with the big farm . . .

Farmer and Stock-Breeder (London, England)

Nigel Harvey

WE are accustomed to think of America as a land of large farms. And you will certainly find over there farms far larger than anything we know in this country. The famous King Ranch in Texas, for example, covers a million acres and even in the less dramatic Middle-West there is a market garden of 5,000 acres whose owner imports the entire population of a Mexican village for his peak labor periods. But such agricultural empires are exceptional.

As a matter of fact, only one farm in 40 in America is over 1,000 acres. The bulk of American food production comes from some two million substantial family farms. The remaining 2½ million farms include small family farms and a variety of smaller units, among them many that we would class as peasant or part-time farms.

As in Britain, most American farms, therefore, are small farms. And these small farms are now facing a new challenge, the challenge of technology.

For in the past generation, farmer, scientist and engineer, working together with cheerful American energy and backed by the largest research and educational services the world has ever seen, have revolutionized American methods, equipment, habits, even the landscape itself. Hybrid maize and the gigantic irrigation schemes of the Far West are among the major technical triumphs of our age. But they are only episodes in the general development of modern American farming.

Reprinted by permission from Farmer and Stock-Breeder, Stamford St., London, S.E. 1, England

The results of all this are shown in the statistics. Since 1910 the agricultural acreage in America has remained fairly constant. But the total agricultural output has increased by three-quarters, the average output per man has more than doubled. In other terms, every man on an American farm in 1910 fed seven people; in 1950 he fed 15 people; and today 18.

The 1958 Farmers' Tax Guide is now available at the offices of county extension agents. It is provided by the Internal Revenue Service and should be a valuable reference book for the job of preparing income and social security tax returns.

This, however, has proved better for the fed than the feeders. The American farmer has steadily produced more food than available markets can absorb at acceptable prices. The Government has striven equally steadily to prevent a disastrous fall in farm prices. And now the amount and cost of the agricultural surplus, away in Government bins to keep it off the market, has become a major problem. If every American farmer died in the night and all his crops and stock with him, Americans could still live on this surplus for a matter of years.

Yet it is superficial to call this a problem of over-production. Over-production is the symptom, not the cause. It is really a problem of over-investment.

American investment in agricultural technology—in fertilizers, machinery, disease-control, laboratories, advisory services and the rest—has rendered excessive the existing "investment" of men and acres. Technology, by enabling fewer farmers on less land to produce has created the problem of redundancy.

It has, in fact, served notice to quit on a section of the farming industry. It has also given some pretty broad hints to farmers on the order of quitting.

New Rural Proverb

Technical development makes considerable demands on the farmer who exploits it. First, it requires heavy capital expenditure. The saying that "technology feeds on capital" is now almost a rural proverb in America.

Second, it requires a higher standard of management in both the planning and running of the farm, partly because the farmer is using more complicated equipment, partly because the increased expenditure on the tools of his trade renders him increasingly vulnerable to price fluctuations in the economic world beyond his gate.

Third, it brings into existence outside specialists who provide the farmer with goods and services he once provided for himself. This gives him more time for his main job of farming. But, since specialists require payment, this extra time must be spent profitably; and this is not always easy on small acreages which can only absorb a limited number of man-hours unless a more intensive system is adopted. And, of course, more intensive systems mean more capital.

In short, technical development favors the farmer with capital against the farmer without it, the farmer with leisure to study and reflect against the farmer preoccupied with routine chores. Above all, it favors the big farmer against the small farmer.

For instance, the bulk milk tank sells its benefits at the cost of a capital outlay which gives the farmer a direct incentive to keep it full. In the Middle-West this means a minimum herd of 20 to 25 head, so that small producers are faced with the choice of "getting big or getting out."

Again, the new varieties of hybrid maize (corn) spread most rapidly in the good maize-growing areas where men had the money and managerial skill to exploit them. The poor maize-growing areas followed their example later and with less profit.

More generally, the economists of Iowa have calculated that in the cornbelt costs per unit of production fall substantially as acreage increases up to 160 acres. After that point, further increases in size bring relatively small savings. But one Iowa farmer in three farms under 160 acres, and therefore competes at a disadvantage with his more substantial neighbors.

Udders of young dairy cows should be inspected to see if there are more than four teats, say Purdue University dairymen. Extra teats should be removed before the calf is a month old to prevent uneven development of the udder.

The Americans have met this problem of over-production by a migration of men and land out of farming.

Sometimes this has been encouraged by official action, for they recognize that the smaller the proportion of the population necessarily engaged in primary industries producing raw materials, and the larger the proportion engaged in secondary manufacturing industries, the higher the general standard of living. (After all, they add, if you want to see hunger, you go not to the industrialized countries of the West,

but to the overwhelmingly agricultural countries of the East.)

Hence the recent Soil Bank scheme and the extension of social security to farmers, the one designed to take land out of production, the other to take men off the farms by allowing them earlier retirement.

But most of this migration has been the result of individual decisions; and these have followed the promptings of technology.

In 1940 there were six million farmers in America, in 1955 only 4¾ million. In the same period the average size of a farm rose from 170 acres to 242 acres. And these trends continue. In 1956 one-third of all transfers of land were for the purpose of enlarging farms. Clearly it is the smaller farmers who are leaving the land.

In so varied a country as America, however, national averages are poor tools to use.

For our purpose a better illustration is the cornbelt state of Indiana, which corresponds generally to an East Anglian grain-county. Here the number of farmers dropped from 185,000 in 1940 to 154,000 in 1955, and the average size farm rose from 107 acres to 125 acres.

Four Thousand More

In only ten years, for instance, the number of farms over 200 acres has increased from 8,000 to 12,000.

In the rich cornbelt—our East Anglia — the amalgamation of small units into larger is the answer to the challenge of technology.

The farmsteads disappear, the fields change hands. But in the poor areas the response is more drastic. Here farmers seek other jobs and either keep on the farms as part-time holdings or abandon them altogether. Thus, in some apparently agricultural parts of the Kentucky hills the full-time farmer is a rarity, and if you walk up the creeks of this strange, shaggy countryside you will frequently come across derelict farms slowly reverting to scrubby fields of abandoned farms slowly reverting to scrubby woodland and the house disintegrating.

In the dismantled buildings of amalgamated farms and the derelict fields of abandoned farms the Americans see evidence of agricultural progress. They regard them as they regard disused canals, as evidence that someone has found a better way of doing the job. For they pride themselves on this adaptability and, as a nation, they owe much to technology to dispute its rulings or ignore its implications either in the urban factory or in the rural field.

Tips for Safe Winter Driving

These driving rules for telephone linemen are excellent advice to you . . .

Condensed from Rural Lines

WINTER ice and snow multiply the hazards of driving, but that doesn't mean accidents have to multiply, too.

Industry, government, and research foundations have spent thousands of dollars to get the facts about winter driving safety and to pass them along to the public.

Farmers who read and follow these winter rules of safe motoring should make it through the next few months with vehicles and person intact.

1. *Use good tires and tire chains.* The best chains cut stopping distances in half when roads are covered with snow and ice. They give 4 to 7 times more traction for starting and climbing. Even with the help of tire chains, however, slower than normal speeds are a must on snow or ice.

2. *Get the feel of the road.* Try your brakes occasionally while driving slowly and away from traffic. Determine just how slippery the road is and adjust your speed to road and weather conditions. Expert drivers don't skid.

3. *Use sand.* It improves slow speed traction on ice and helps to get started when stopped on a slippery spot. But don't depend on it to get you out of trouble.

Farming is the most dangerous of all major industries, based on the total number of accidental deaths, reports the National Safety Council.

4. *Keep windshield and windows clear.* At the start of the season, make sure windshield wiper blades are in good condition and do not streak. Carry a scraper for the outside of windows and make sure heater and defroster are working properly. Danger may come from the sides or rear as well as the front, so all windows must be kept clear.

5. *Follow other vehicles at a safe distance.* Don't "tailgate."

Condensed from Rural Lines, published by the Rural Electrification Administration, Washington

It takes 3 to 12 times as far to stop on snow and ice as on dry pavement.

6. *Fan or feather your brakes.* The key to stopping any vehicle with full control is to avoid locking the wheels. A driver has to be even more careful when his truck is lightly loaded or empty, because brakes are designed for a full load.

7. *Make sure headlights are turned on soon enough.* More accidents occur in the treacherous half-light of dawn and early evening.

8. *Accept your responsibility.* Don't blame the weatherman for an accident. You are the only one who can avoid getting yourself into trouble.

Government Approves New Chemical For Cattle Grub Control

Trolene, a new systematic insecticide for control of the cattle grub, has been approved by the federal government for general use.

Gordon Mickle, extension entomologist at Colorado State University, predicts the new chemical will rapidly replace rotenone as the chief weapon against grubs.

Rotenone gave an effective kill of grubs. But the grubs were killed only after they had caused damage to both the meat and the hide of animals. Moreover, application of rotenone, either as a spray or as a dust, was a laborious, time-consuming task.

The new chemical, trolene, is administered internally—either as a bolus (pill) or as a drench. Cattlemen may apply a bolus with a balling gun. If they choose the drench method, they must mix the chemical with water and administer with a syringe or bottle.

The new insecticide then moves swiftly through the animal's body to give easy, effective control of cattle grubs. Trolene not only destroys mature grubs which are within the body at the time of treatment, but it also controls the young grubs before they reach the animal's back and damage the meat and hide.

The insecticide was used in tests in Wyoming during the winter of 1956-57, Mickle reports. Results were 100 per cent successful. Both common and Northern cattle grubs were effectively controlled.

—*Colorado State University*

Alfalfa — Still Better Varieties Coming

How scientists develop new disease and insect resistant kinds; and growers produce the seed.

Condensed from The Farmer

William M. Kircher

YOU have some good alfalfa varieties now, but there are new and better ones in process of development. And you are going to need them.

Chances are that the Spotted alfalfa aphid is going to be doing some damage in your fields if he hasn't already started. A vicious character, this aphid was first discovered in this country in 1953, spread to six states in 1954, to 18 in 1955, and to 30 in 1956. You will need a variety of alfalfa he shuns.

The stem nematode, now a problem in the Southwest, may one day push into the Upper Midwest. Then you will need a kind resistant to it.

Foliage Diseases a Problem

The disease, summer Blackstem and a half dozen other foliage diseases are already causing a cut in your hay and pasture yields so you need a variety resistant to these diseases.

And you may be sure that any new variety, thought by plant breeders and their co-working scientists to be worthy of introduction, will be resistant to the almost universal alfalfa disease, bacterial wilt.

Additionally, any variety worthy of a place on your farm will have proved itself a high producer of forage as well as seed before the plant breeder-pathologist - entomologist - physiologist team of scientists release it for production.

Scientists in alfalfa-area agricultural experiment stations throughout the country are now, and for several years past have been, at work developing new varieties tailored to the needs of the different areas. Some are about to be introduced. When they are, and that first handful of precious seed is available, the wheels of production are greased and manned to make great quan-

Reprinted by permission from The Farmer, St. Paul 2, Minnesota

tities available for general distribution at incredible speed.

This is the story that emerges from recent conferences with plant breeders and their co-workers of a half dozen states and USDA's Agricultural Research Service, and with producers of 85% of the certified alfalfa seed produced in this country. It was a nine-day, 5,000-mile airplane, bus and automobile tour with other agricultural editors.

At the close of the winter-wheat signup period on October 4, only 3.8 million acres of wheat-allotment land in the United States had been placed in the 1958 acreage reserve of the soil bank. This is in contrast to the 10.7 million acres placed in the acreage during the same period last year.

What was seen on the tour is how the jig-saw picture of alfalfa variety development, then of foundation seed increase, then large-scale certfied seed production is fitted together and from it a trail leads directly to the seeder box on your farm. What was also seen is how current varieties are performing. And at the moment that is most important.

Throughout most of Minnesota and Eastern South Dakota it appears that Vernal, developed by Dr. R. A. Brink and Dr. L. F. Graber at the University of Wisconsin Experiment Station and released in 1953, is performing better than Ranger, the pacemaker that came into richly deserved prominence about seven years ago when large quantities of seed first became available.

Vernal is Hardiest

In University of Minnesota tests, Vernal withstood the rigors of last winter better than any other variety, including Ranger. And, as you know, last winter was the best in years as a test of winter hardiness.

In the test, 80% of Vernal plants were normal at the outset of spring while 59% of Ranger came through as well. Even so, Ranger compared most favorably with all varieties, other than Vernal, under test. Lahontin, for example, a new variety classed in the intermediate winter hardiness group, came through with only 2% normal plants in spring.

Dr. Laddie Elling, University of Minnesota agronomist, credits Vernal with being highly resistant and a higher yielder by about a half ton per acre than Ranger. Dr. W. W. Worzella, head of the Agronomy Department at South Dakota State College, says Ranger might profitably be replaced

with Vernal in the Eastern one-fourth to one-third of the state. Dr. C. P. Wilsie, Iowa State College, praises Vernal for its demonstrated regrowth ability after heavy cutting or grazing.

Beef producers have seen consumer demand for their product steadily increase for the past several years. Beef consumption on a per capita basis in the U. S. in 1956 reached a peak of 83.5 lbs.

But Vernal seed is somewhat costlier than Ranger. That is not because it is new, but rather because it produces only about 75% as much seed as Ranger so seed price has to be pushed upwards to 10c or more per pound over Ranger to meet the cost of seed production. At just how much of a premium price level it is more profitable to buy Vernal than Ranger is a question unanswered by the researchers, but the half-ton per acre and the superior winter hardiness figures provide a base for arriving at an answer.

Interest in and work with alfalfa improvement was sparked in 1926 when bacterial wilt was identified as the disease that had begun killing older alfalfa stands. From 1858, when Wendelin Grimm seeded the first alfalfa in America on his farm in Carver County, Minn., until the early 1920's, the crop had much its own way. Neither diseases nor insects seemed to bother it any more than any other crop. And for some years thereafter wilt was alfalfa's only plague. But other diseases did come along, and these, plus the desire of plant breeders to provide higher yielding varieties, caused them to step up the tempo of alfalfa variety development, then to speed up the machinery of seed increase as fast as possible.

Development and increase of the variety, Vernal, is an example of how rapidly a new and improved variety moves from the hands of the researcher into large-scale production. There was a sample of a little less than 10 pounds of Vernal available for shipment to the San Joaquin Valley for increase in the spring of 1953. That was seeded in rows on nine acres at a seeding rate of just a shade over a pound per acre. It was pampered through the summer with exactly the right amounts of water, just the right number of cultivations, and with enough bees to pollinate it, and in the fall there was a crop of 7,500 pounds of clean seed. There were 4,994 acres in 1954 with a seed crop of 1,813,000 pounds, most of it in California; 11,964 acres in 1955 with a crop of 4,828,000 pounds of seed, and 15,823 acres in 1956 with a production of 6,351,000 pounds of

seed.

California growers got the bulk of the seed for this increase because they had previously proved through rapid increase of Ranger seed that their area and production methods are especially well adapted to seed production. Additionally, it had also been proved that seed of winter-hardy varieties retain their hardy characterestic even though increased in California's warm climate.

The top and bottom pairs of snake jaws are connected only by ligaments (no bones). This enables it to swallow objects larger than its mouth.

The San Joaquin Valley in which this seed is produced is arid. What little natural rainfall there is, evaporates quickly. Average precipitation is only 11 inches a year. Summers are terrifically hot, and seldom does winter temperature fall below freezing.

With irrigation and the very rich soil of the valley such a climate is an advantage. The oncoming crop can be watered precisely when water is needed.

Farms range in size from 250 acres to upwards of 50,000. Land development is costly. Water for irrigation is pumped from wells, most of them 1,800 feet or more deep. Drilling, casing, and supplying the 150-horsepower electric motor for such a well costs about $50,000. A well supplies water for 450 to 640 acres.

In addition to water development cost, land leveling adds further to development cost. Then, after land is in production, subsoiling to get good drainage and other tillage operations to keep the land in a highly productive state builds the cost figure higher.

On farms where alfalfa seed is produced, alfalfa plays second fiddle to cotton for cotton is the more profitable crop. But alfalfa is ideally suited to play second fiddle. It doesn't need much water when the irrigation well on a section is hard put to it to furnish enough water for cotton it pushes its roots downward to tap the water below a level of three feet that cotton didn't get. That's important, of course, where water is a major expense item.

And by Upper Midwest standards, seed production is enormous. Take crops statisticians' figures for the 1957 crop for example. They estimate average production in Minnesota at 40 pounds per acre; in North Dakota, 45 pounds, and in South Dakota, 40 pounds. For California as a whole, the average is estimated at 460 pounds, about ten times more. And on well managed farms, yields of 750 to 1,000 and even more pounds are not uncommon.

The chief factor, other than managed moisture and Nature-provided heat and rich soil that makes these yields possible, is that seed is not a by product of hay production. It is the only crop from these large, level, sun-scorched fields. As the crop comes on in spring, two or three colonies of bees are put on each acre at a cost to the grower of $3.50 per colony. The first seed crop is made and not disturbed. Then the second, then the third, each of the first two toppling over, the seed held in the tight-packed "horns" until the third comes along and ripens. Meanwhile, there is little if any rain to shatter the seed out on the ground.

Then the big, self-propelled combines, as many as 40 under one ownership on the Arnold-Thomas ranches near Five Points, California, are moved in for the harvest. These combines can't be pushed along as fast in the alfalfa seed harvest as they can in an Upper Midwest wheat field. The limit is about six or seven acres a day. So in an operation where there are 6,000 acres to harvest, it takes 40 combines upwards of 20 days of steady going to get the job done.

And as the seed is trucked in from the field, it is run through cleaning plants and cleaned to 99.5% or better purity before it is bagged.

All along the production line, publicly-employed inspectors as well as producer-employed inspectors keep an alert eye on equipment and its management so that the end product may be certified as to purity and variety. For example, combines must be vacuum-cleaned, and in some instances washed, before being moved from a field of one variety into a field of another.

Here's a tip for the farm or ranch operator who does not mind a smelly job. A small electric-powered grain auger will clean a septic tank. Speed up the auger to just about motor speed and it will lift water and all. Use a 16-foot auger; the 11-foot is too short. The sludge should be hauled out to a field and deep-plowed under. Do not raise vegetables on sludge mulch.

Thus is the quality and purity of seed from this area guarded against contamination.

New Varieties Coming

And what new varieties are the plant breeders and their colleagues about to put into this seed production line, and into seed production in their own states? One highly promising one, tailored to the rangelands of the Northern Great Plains is a creeping type

developed by Dr. M. W. Adams and his co-workers at South Dakota State College. It is now being tested for disease resistance and Spotted aphid resistance, and if it passes tests it will be released. It has already proved ability to persist in stands of range grasses where other varieties can't stand the grass competition for very long.

Quite by accident Dr. Oliver Smith, USDA plant breeder, working at the University of Nevada Experiment Station discovered alfalfa lines resistant to the Spotted aphid. He was breeding for a high yielding alfalfa resistant to the stem nematode, so destructive in the Southwest, along with resistance to wilt and foliage diseases. Out of this work has come the variety, Lahontin, that has the Spotted aphid resistance. Those lines in its breeding that make it resistant to the aphid are in the hands of other plant breeders throughout the country where winter hardier kinds are needed and the aphid resistance characteristic is being bred into these kinds.

So even though you have good alfalfa now, there are improved kinds on the way—varieties tested against the diseases and insects and rigors of winter that the variety in your fields must be able to endure.

Dairymen Warned on Use of Penicillin for Mastitis

The Federal Food and Drug Administration is enforcing new regulations regarding penicillin in mastitis ointments, says I. W. Slater, Wyoming Extension dairyman.

The new regulations require that no single dose of mastitis ointment can carry more than 100,000 units of penicillin. Formerly, some ointments contained as much as one and one-half million units per dose.

The reason for the regulation is that a recent Federal Food and Drug survey indicated that too high a percentage of market milk contains penicillin. Unless this percentage is reduced, the antibiotic will be banned in mastitis ointments.

The regulations also state that every ointment tube label must warn dairymen to withhold from market for at least three days all milk from treated cows. It takes that long for penicillin to work its way completely out of the udder, Slater says.

—University of Wyoming

Plan Your Tax Paying

It will save you money . . .

Condensed from The Nation's Agriculture

Wayne Ritchie,
Doane Agricultural Service

YOU'LL be filing your federal tax return before long. By figuring and planning ahead, many of the headaches, mistakes and omissions can be eliminated. One of the best ways to eliminate simple errors of addition and subtraction is to make out your return, sit on it a few days and then go back over it. You'll be surprised what a few days lapse between figuring and checking will do for your accuracy. But it isn't possible unless you plan and organize ahead of time.

There is no magic in income tax management—no one course of action will ordinarily result in huge savings. It is just like farm management and planning. You need an over-all program and then it takes careful record keeping, good information sources and close attention to details through the year.

Also, you should seek qualified assistance when confronted with a problem you are unable to solve. But this doesn't mean you can shuck off all responsibilities of informing yourself on income tax regulations, etc. A doctor is handicapped when he has to diagnose without the patient's cooperation. So is your income tax advisor.

A Sound Plan

What do you want to accomplish income-tax-wise? It's necessary to ask yourself this question in working out your over-all objectives. For some, it's paying the least federal tax possible under all circumstances; others may be willing to sacrifice some additional tax in the short run to gain over the long run.

Basically, for the operating farmer, a sound plan for taxes is one which is compatible with sound farm management. You don't want to get in the position of changing your farming operations just to take advantage of a tax-saving procedure that has only momentary value.

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For instance, those on the cash basis often find themselves in the position of selling two crops in one year. This causes income bunching which often results in higher taxes.

Take advantage of legitimate methods to move crop sales from one year to another, but not by sacrificing the crop on a low market.

The world's largest seed is the coco-de-mer, a coconut, growing on the Madeline Islands of the Indian Ocean. It often weighs 50 pounds.

The government loan program is useful for this purpose. Here are the general rules on this. You can consider the crop sold in the year you take out the loan and put the loan proceeds in that year's income. Or you can consider the government loan to be just like any other loan, and include the proceeds in the year crop is delivered to the government or redeemed. The joker is—once you adopt one method you must continue to follow the same course of action. To change requires permission from Internal Revenue Service.

Be very careful in arranging sales where crops or livestock are delivered in one year and actual payment is received in the following year. Often, the IRS will determine that income was constructively received in the year that products were delivered. Such actions as holding checks until the new year are out in most cases. You'll just get in trouble.

Income is only half of the net farm income equation. The other half is business expenses. Cash basis taxpayers have several opportunities to shift expenses from one year to another. They can buy 1958 feed supplies this year to reduce 1957 farm income. Or they can buy feed needed this year on credit and pay for it next year (provided, of course, they make prior arrangements with their supplier; saving tax dollars is not worth endangering credit rating). Be sure that sales or purchases planned to divert income from one taxable year to another are "arm's-length" deals. Make them clear and straightforward. Don't use notes or mortgages if you can help it—they can cause you trouble.

*Some methods of shifting in*come and expense have been outlined. They should be used largely to level out net farm income from year to year. Seldom does it pay a farmer to use these methods simply to postpone income and hence tax. If you are approaching 65 and will be eligible for an additional deduction, it will pay to put off receiving

income. If you think tax rates will be lower next year it might pay to divert some '57 income into 1958. However, the tax advisors say any cuts next year will be too small to make it a sound tax-saving move.

Tools Needed

After defining your objective, tax-wise, you must be able to reach it by using records, estimates and tax information. Before the end of the year, run your totals, then estimate receipts and expenses for the remainder of the year. You'll then be able to see what steps are needed to secure your objective. The sooner you get this done, the more time you will have for action. Avoid, if possible, last minute, hastily-planned action. It often leads to trouble.

Information is also needed. You can see what should be accomplished. But how is it done? Most farmers haven't the time or money to be involved in tax litigation. They aren't in a position "to take their cases to court." So they want to use methods that are already accepted by the Internal Revenue Service.

Build a farm tax library. It won't cost much money and can be highly profitable reading. Here is a beginning:

Your Federal Income Tax, from Superintendents of Documents, Washington 25, D.C. Price $.30.

Farmers Tax Guide, from I.R.S. Offices, County Agents. Free.

The Small Timber Owner and His Federal Income Tax, from Superintendent of Documents, Washington 25, D.C. Price $.20.

Regulations Relating to Depreciation, from Superintendent of Documents, Washington 25, D.C. Price $.20.

Income Tax Management for Farmers, available from most land grant colleges.

In addition to the government bulletins, several private income tax services are available. You will also be able to get social security information from your nearest social security or Internal Revenue office.

Capital Gains on Livestock

Treatment of the income received from sales of breeding animals continues to trouble many farmers. The treatment of animals that meet the qualifications, owned for more than 12 months and have been used for dairy or breeding purposes, is well established. Their sale should be reported on Schedule D and any gain is taxed at capital gains' rates.

The trouble comes with immature stock, sold before actual production of offspring or milk. You can almost be certain that immature stock sales reported on Schedule D will be questioned.

To substantiate your position you will need proof that the animals were being held for breeding or dairy purposes (by you) and were sold only because some defect became apparent which would hurt their value. If you haven't this type of proof, better not use this method.

It may be necessary for you to figure a salvage value when computing a depreciation schedule for purchased breeding animals. The Internal Revenue Service is becoming quite insistent on this, not only for livestock but for other depreciable assets as well. In one court case they used canner-cutter prices at a large stockyard for salvage value.

Sometimes, when purchasing older breeding or dairy cows, it is difficult to establish length of life for depreciation. Here is a table that was developed for *dairy* cows by the New Hampshire Agricultural College.

Estimated Life Expectancy

Age of animals	*Length of life remaining*
3-4	3.8
4-5	3.3
5-6	3.0
6-7	2.7
7-8	2.5

DEPRECIATION METHODS COMPARED

A $2,100 tractor has a useful life of 10 years and a salvage value of $100. The chart gives the comparison between the three common methods.

YEAR	STRAIGHT LINE (10 PER CENT	ANNUAL DEPRECIATION 20 PER CENT DECLINING BALANCE	ANNUAL DEPRECIATION SUM OF THE YEAR'S DIGITS
1	$ 200	$ 420.00	$ 363.64
2	200	336.00	327.27
3	200	268.80	290.90
4	200	215.04	254.54
5	200	172.03	218.18
6	200	137.63	181.82
7	200	110.10	145.45
8	200	88.08	109.09
9	200	70.46	72.74
10	200	56.37*	36.37
Total	$2,000	$1,874.51	$2,000.00
Salvage value or unrecovered cost	$ 100	$ 225.49	$ 100.00

*If the tractor is retired at the end of the 10th year, your depreciation allowance would be $181.86 (unrecovered balance ($281.86) less salvage value ($100).

Those of you on the accrual basis who normally shift raised breeding livestock from the inventory to capital account should secure permission from the Internal Revenue Commission *before* doing so. A recent tax case substantiates this action.

The normal human body is 7½ times the length of the head.

Depreciation — Surveys have shown that farmers haven't used the faster depreciation methods allowed by the 1954 Internal Revenue Code. Two methods, sum-of-the-years'-digits and declining-balance method at a 200% straight-line rate, give a much more rapid "write-off" in the first few years of ownership than does the straight-line method. They can be used on new assets which have a useful life of 3 or more years.

If you've purchased any new equipment this year, consider using these methods. Talk it over with your tax advisor. As a general rule it will pay you to use a "fast" method if you plan regular purchases of depreciable assets over the next several years. Also, you'll be able to keep more "cash" in the business. If you are near retirement, then it would probably be sound to use the straight-line method.

You should also figure a reasonable salvage value when computing depreciation schedules. As mentioned before, IRS is becoming more insistent on this point. This is particularly true if you usually trade before the useful life of the machine is used up.

Drouth-Forced Livestock Sales

Many farmers had to sell breeding stock because of drouth last year. They were able to put off paying tax on the number sold in excess of the normal sales of breeding animals. Then 12 months were allowed to find replacement stock. Otherwise, the tax would have to be paid. If you haven't been able to find suitable stock, you can apply for an extension. Make application to the Internal Revenue office where you file your returns.

When To Report and Pay Your 1957 Federal Farm Income Tax

If your income is solely from farming and you file an estimate on Form 1040ES, paying at least 66⅔ per cent of your final tax on or before January 15, 1958; you have until April 15th to file your final and complete return and pay the remainder of your tax.

If you don't file an estimate by January 15th, your complete return and total tax payment for 1957 is due February 15, 1958.

If you have other income than that from farming, check with your local Revenue Agent for tax dates. Above information is from the Internal Revenue Service.

Farmer's Digest Editors

Feeding Dairy Cows by Conveyor

A farmer's wife tells the story behind a modern hay storage and conveyor feeding system . . .

Condensed from Western Dairy Journal

Mildred Burri

A HAY storage and feeding setup, complete with conveyor, at work on our (Mildred and George Burri) 75 cow dairy farm near Nampa, Idaho, has proven out after 5 years operation. The savings in time and labor, plus no waste feed, have paid for the investment.

Barn and conveyor were built from necessity, following a fire which destroyed a 350 ton hay storage barn, together with part of our winter feed.

As we cleaned up the still burning debris, we wondered if we should rebuild or give the place back to the Indians. Many times in the weeks that followed we felt like doing the latter.

However, we had to meet the situation head on.

Our two older boys, Don and Wayne, were in college, and expecting to serve their turn in the Armed Forces upon finishing. Then there was Jim, our youngest, still in grade school. Help at the time was nearly impossible to get—let alone keep.

From Chaos an Idea

We knew if we were to continue our 60-70 cow herd we would have to cut labor to a minimum.

Feeding was a problem. It is no small chore to properly feed 100 dairy animals through a wet, stormy, Idaho winter.

But, eventually out of this chaos came an idea.

Result was a 72x32 ft. Quonset hay storage barn on an 8 ft. high concrete wall. This base added greatly to the capacity at a minimum of expense.

Through the center of the barn is a concrete trough, 2x2 ft. to house an endless chain with return. A groove in the concrete accommodates planks, held flush with the floor and covering the conveyor.

The planks can be removed at any point to let hay be forked onto the endless chain. Hay, then,

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is carried up and outside where it is deposited into the manger.

A Loud Buzzer Rings

Here again the hay is moved slowly by another pair of chains, held 3 ft. apart by hardwood slats, on its way to the end of the manger.

Two timing devices help control the whole works.

During the depression, Americans gave 1.17% of their income to churches; now, it is 1.11%. That is about a tithe of a tithe.

The first, an old truck transmission, can be set to move the conveyor down the manger at the rate of 8, 13, or 18 minutes. The second, an old kitchen range timer, is set at the end of the manger and lets off its loud buzz when the first forkful arrives. This tells the operator it is time to stop the machines.

At the far end of the manger is a concrete pit. This catches any leftover hay, so that it cannot be dragged back with the return chains.

The covered manger is made of concrete 4 ft. wide, to let cattle feed from each side. Cows cannot push the hay out or "root" it into piles because the slats serve as dividers.

Within Pocketbook Range

Bottom of the manger, however, is made of wood—well oiled—to prevent wearing of chains, as would concrete. And after 5 years, there is no visible wear on either the chains or wood.

In Idaho, we are pretty sure of getting good, dry, baled hay. This we stack outside the Quonset. And, at our convenience, the hay is run through a Miller feed mill.

Hay, blown directly into the Quonset can be aimed from inside the barn to fall on any spot in the building. However, we always have to keep one small part of the center of the floor empty so we can remove the planks through which to feed.

Entirely farm-built, this rig is not beyond the pocket book of the average dairyman.

And, by adding on to the end of the manger—at little expense—the capacity could be doubled or tripled. At present, 75 cows are feeding at the 280 ft. long manger, with adequate room to handle an additional 25 springing heifers.

After 5 years use, this plan has paid for itself in time and labor savings. A bonus feature has been that cows always have fresh, dry hay at all times.

For us, it is pleasant, too. We just estimate the number of forks full of hay that will be slicked up

before the next feeding, set the timer on the manger, flip a switch and start forking hay through an opening in the floor. When the bell rings on the old kitchen stove timer, we stop.

It may sound complicated, but it's really very simple—and it operates even to a critic's satisfaction, in any kind of weather without having to go outside the barn.

A Look At The Cost Picture

"As far as the actual cost of our automatic feed manger, it is a hard figure to pin down," said Mrs. Burri.

"We just got the idea, leveled a rocky hillside and set to work with a couple of carpenters.

"We figure that, together with the roof, the 140 ft. automatic feed manger (which doubles into 280 ft. as both sides are used) cost about $2,000.

"However, we did about half the work, and poured the concrete with the tractor manure loader.

"Cost, of course, could vary with the locality and the type of materials used. As for the hay storage barn, this could be made from the simplest type to as elaborate as one may choose.

"Then there is the additional cost of the chain conveyors, but what we paid at that time would have little bearing on the cost today."

Livestock Need Ice-Free Water

Livestock can't be expected to make economical and rapid gains during the cold months unless plenty of ice-free water is available at all times. Too many farmers take the livestock water supply for granted. If cattle and hogs are to make the greatest gains, they must have plenty of water.

On many farms, the water supply is the weakest link in the entire livestock program. Even the best in feed and forage can't offset a restricted water supply.

Automatic, heated waterers provide the best means for clean, fresh, ice-free water. With today's pressure water systems, automatic fountains can be placed in every feed lot on the farm. Operating costs for automatic waterers are small — especially when the savings in labor are considered. The cost for electricity to run an automatic watering system for 50 to 125 hogs is estimated at less than $10 a year.

—Virginia Polytechnic Institute

How to Save Time and Money on Chores

Check yourself; see if you can afford to invest in equipment to ease chore time . . .

Condensed from National Livestock Producer

Lee Schwanz

YOU don't have to go very far down the road to find a farmer who uses nothing but 4-row equipment in the field but still spends his winters carrying a basket on his shoulder. Why the difference? Partly because many farmers fail to realize how much their time is worth and partly because it is hard to figure how mechanization of the chores can pay off.

State college economists and engineers now are studying the cost of choresavers and they find that electrical and mechanical hired hands pay their own wages. R. N. Van Arsdall at the University of Illinois clocked the feeding operations of dozens of farmers, then figures the costs. He watched one farmer who trudged 9,000 feet every day through feedlot mire carrying a loaded bushel basket half of the way. Cost—nearly $1 per ton of feed. On another farm, a tractor and self-unloading wagon spilled feed into fenceline bunks at the rate of nearly 1,500 pounds per minute. Cost—less than 50 cents per ton after all costs of the machinery were charged off.

Make Machines Pay

It takes volume to make machines pay. But Van Arsdall observes, "A farmer needs something better than a basket if he feeds over a dozen head. A tractor-and-wagon works well up to 150 head. Carriers are in the medium range, working best between 20 and 100 head. Self-unloading wagons pay off above 150 head."

Here's how the various systems compared in the USDA's Illinois farm studies:

- Hand Feeding: 1.5 tons per hour; no new investment; cost, 88 cents per ton.
- Overhead Carrier: 3 tons per hour; new investment be-

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tween $250 and $1,000; cost, 62 cents per ton.

● Tractor and Wagon: 6 tons of feed per hour; no new investment; cost, 88 cents per ton.

● Self-Unloading Wagons: 12 tons per hour; investment $1,500; cost, 50 cents per ton. Fenceline feed bunks, built for self-unloading, cut chore time by one-half.

The best way to figure whether or not a piece of equipment will pay on your farm is on the basis of how many minutes per day it will save you. Over a period of years, 10 or 20 minutes saved daily adds up to enough to pay the cost of a $1,000 to $2,000 piece of equipment.

Charles French, Purdue economist, has worked out figures to show how much time a machine must save to justify the equipment. The accompanying chart will help you decide how much you can afford to spend.

Suppose a new silo unloader has a $1,500 price tag. It will work automatically on a job that takes you 50 minutes per day. If you value your time at $1 an hour, the chart shows that you could spend up to $1,900 on the unloader and still get your money back over a 10-year period.

These figures cover all costs on mechanization. They include the first cost plus at least four other costs — interest, insurance, taxes and the repairs that go along with power equipment. Usually, these four "hidden" costs average about 5% of your initial investment each year.

If a machine can save you (per day)	AND YOUR HOURLY WAGE RATE IE: $.75	$1.00	$1.50	$2.00
	THEN — YOU CAN AFFORD TO INVEST:			
60 min.	$1750	$2250	$3700	$4800
50 min.	1450	1900	3050	4000
40 min.	1050	1500	2400	3200
30 min.	750	1100	1750	2400
20 min.	500	700	1100	1600
10 min.	250	300	600	800

Here is how to use this chart. Suppose that if you buy a self-unloading wagon and rearrange your feedlot for fenceline feeding, you will be able to save 40 minutes a day. If you value your time at $1 an hour, you can afford to pay $1,500 for new equipment and still get your money back over a 10-year period. The figures in the chart cover all costs of mechanization including the first cost, interest, insurance, taxes and repairs.

You need to know about how much time a machine will save. Simple time studies are easy. Clock your chores to find out just how much time it takes you to

clean out the barn, handle silage or feed grain to the cattle. Talk with equipment distributors to find out how fast the labor-saving machines work. Visit a neighbor who has one of the machines to find out how long it takes him to do the job under conditions similar to those on your farm.

Many state colleges are doing good work in studying the labor saving possibilities of chore machines too. Write to the agricultural engineering department of your college for information.

Machines do their best job in moving things on the farm. For example, electricity will pump and carry 1,000 gallons of water for less than 5 cents. If you are carrying water by hand this winter, it won't take much figuring to show that you can afford to do this heavy, disagreeable job with electricity.

Self-Feeding Reduces Costs

A cow will eat a ton of silage per month and that's a lot of work if you handle it two or three times before you get it fed. Your labor costs about 50 cents per ton. A hydraulic fork on your tractor can dig that silage and move it to feed bunks for 30 cents per ton. And a self feeding silo does the job with virtually no labor cost at all.

The scoop shovel is the lowest cost way to handle corn if you have less than 3,000 bushels and value your time at only $1 per hour, according to Purdue figures. Above that point, a $400 to $600 auger trailer and wagon is the least cost method of handling hay and feed.

Decline in beef cattle numbers which began last year probably will continue a year or two longer. Slaughter will decline until after numbers begin to rise. Cattle prices are likely to trend up most of this period if demand stays strong.

There are dozens of things you can do to save time and labor that cost very little money. Reorganizing the chore route saved an average of 25 minutes per day in one college study. Just changing the order in which chores were done saved hundreds of steps and a lot of carrying.

Storing feed in bulk where it is to be used is another big step and back saver. The same is true of hay, silage and ear corn. Replacing a gate with a cattle guard, shifting to fenceline feeding so that you don't have to waste time and effort wading or driving through ankle-deep mud are other inexpensive changes that will save time.

All of these improvements are based upon the assumption that

you make profitable use of the time you save. If you want an extra hour of sleep in the morning—and are willing to pay for it —mechanization will do the trick. But from a dollars and cents standpoint, the extra time could be used to boost your productivity.

Ask yourself these questions as you consider a chore investment:

1. Will it replace a man? If you have a son going into service or find hired labor a problem, mechanization can pay off in a hurry. Saving $200 or more per month soon adds up.

2. Can I boost production? Will the machine make it possible to add more cattle, more hogs, or more cows to your operation?

3. Will it help me do a better job? If machines give you the time to save an extra pig per litter this spring, get an extra 5 lbs. of milk per cow or boost gains ¼ lb. per day, you are making a wise investment.

4. Will it speed field work? Many farmers find they can spend an extra hour per day in the field, after they solve their chore problems. This offers the opportunity to get crops in at the best time, to cut forage at its highest feeding value, and to get fields harvested before storms strike.

Almost every farm can use some improvement in chore routine. Perhaps you can do the job without spending any money at all. If it takes money to ease the work, use our chart to figure whether or not the investment will pay off.

Buy Protein Feed by Cost Per Pound

High protein feeds, such as soybean oil meal and 48 to 55 per cent protein dairy concentrates, are good buys for dairymen, according to Don Hillman, extension dairyman at Michigan State University.

When buying protein for dairy cattle, the price per pound of protein is the most important thing to consider because the bacteria in the cow's rumen can break down the protein in cheap feed just as well as in expensive feeds.

To find the cost per pound, simply divide the cost per 100 pounds of feed by the percentage of protein content stated on the label.

In high concentrate feeds the cost of protein runs about 8 cents per pound. Linseed or cottonseed oil meal and 16 to 32 per cent protein commercial dairy mixtures cost about 12 to 15 cents per pound of protein. —*Agricultural News*

Dwarf Corn Has Some Advantages

"Tom Thumb" hybrids lodge less and are easier to harvest, but they also yield less and weeds are a problem . . .

Condensed from Crops & Soils

Thomas E. Clements, Student of Agronomy at University of Illinois

WHAT's WRONG with that corn over there? Why is it so short? The corn next to it is almost 12 feet tall, but the little corn is only about 4 feet tall."

This is what I thought when I saw dwarf corn for the first time this summer.

Dwarf corn is very similar to normal corn except that the stalk joints, or nodes, are much closer together.

The dwarf plant has about the same number of nodes and leaves, but the internodes below the ear are 1 to 3 inches long instead of the usual 6 inches or more in normal corn.

As a result, the dwarf plants are only about 4 feet tall, and their ears are from 12 to 20 inches above the ground. The leaves, ears, and tassels are about the same size as those on the normal plants.

How Is It Produced?

Dwarf hybrids are produced from short versions of widely used standard lines. These short or dwarf versions have been obtained by incorporating the dwarfing gene into the standard inbred line.

Dwarf corn has some definite advantages. The main one is its high resistance to lodging. Because the stalks are shorter, they will remain standing better during heavy rain or high winds. In tests conducted at the University of Illinois in 1955, single-cross dwarfs were 100 per cent erect at harvest while comparable normal hybrids ranged from 45 to 90 per cent erect.

In similar tests in 1956, both dwarfs and normals were 100 per cent erect when harvested in early October.

In plots that were not harvested until the last of November, the normal hybrids averaged 38 per cent erect while the dwarfs averaged 99 per cent. Reduced lodging may mean that harvesting losses can be reduced considerably.

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There are several probable advantages that have not been proved. Corn combines will probably be able to handle the dwarf corn more easily because the dwarfs have less stalk and should cause less clogging. Thus, the dwarf corn may prove to be better adapted to the corn combine than normal corn.

Perhaps dwarf corn can be drilled like the small grains with a shorter spacing and less distance between the rows.

Fewer pounds of total dry matter are needed to produce 100 pounds of gain on feeder cattle with high-moisture corn than with No. 2 corn.

Also, dwarf corn might make a good nurse crop to be planted with grasses and legumes because there is less shading between the rows than with normal corn.

It is possible that dwarf corn may be better adapted to poor soil. This year in southern Illinois on Cisne soil (gray prairie soil) the best dwarf hybrid yielded 87 bushels and U. S. 13 yielded 86 bushels. On Wynoose soil (timber soil) the best dwarf yield was 55 bushels. The comparative high yield of the dwarf might show that they had more drought resistance.

These are just possibilities. There still have to be many tests and comparisons made before they can be proved—true or false.

Ornamental plants can be pruned any season of the year to remove dead, diseased, broken or injured parts.

The main disadvantage of dwarf corn is the possibility of lower yields. In 1956 tests conducted by Illinois corn breeders, dwarf hybrids averaged about 20 per cent less yield than normal hybrids, when the yields of the normals were in the 135 to 150 bushel range. Under highly favorable growing conditions, the best dwarf hybrid yielded 127 bushels per acre. However, in tests on poorer soil the dwarfs yielded, on the average, almost the same as their normal counterparts.

Growth of weeds between the rows late in the season may present a problem. When dwarf corn is grown at the normal 36- to 40-inch row spacing, shading between the rows is greatly reduced because the dwarfs are shorter. In tests on fertile soil, weed growth after layby was quite noticeable.

There are indications that dwarf hybrids may be more sensitive to crowding than normal hybrids. Producing seed may be

another disadvantage because some dwarf inbreds may be poor producers of seed.

Dwarf corn seems to have definite promise. Its advantages may include high resistance to lodging, easier combining, possible use as a nurse crop, easier picking and better adaptation to poor soil. Lower yields and a greater weed problem are possible disadvantages.

Many tests and comparisons need to be made before dwarf corn can be released to the general public. If these tests prove that dwarf corn is as good as it seems to be, dwarf corn may become a familiar sight on many farms and truly become the Mighty Mite of Maize.

A Farmer's Prayer

By Samuel R. Guard, Editor of Breeder's Gazette

Thanks be to Thee, Our Father, who dost so providently Shepherd the countless years into the fold of time.

Give us this new one, we pray Thee, to raise nobly.

Our Father, Who forgets not one sparrow's fall, watch after us whether we limp or soar.

We praise Thee with great joy for this new year of Our Lord. Gird us with health and strength and wisdom, and make us to walk humbly with Thee right smack through a bright new year.

Who are we that Thou hast blessed us so with land and cattle, with sons so stout and daughters so fair?

We would be upright, Lord, but tight a-hold of Thy hand all this year, and forever.

Amen.

Roy Patrick's 15 Keys for Good Breeding

For this Guernsey breeder, good breeding, feeding and sanitation pays dividends . . .

Condensed from
New Jersey Farm and Garden

Al Mahan

"NEVER put a cow in the sale ring you wouldn't be proud to own," says Roy C. Patrick, owner of Quinton Stock Farm, near Salem, New Jersey. This critical standard has earned the Salem County Guernsey breeder an enviable reputation, nationally, as a "dirt farmer" who has made good in a circle of breeders who traditionally have a lot of outside money to invest.

Mr. Patrick is a difficult man to interview when you talk about the "records" his herd has made, and this modesty probably has carried him far. But when you talk about the management factors behind breeding, he shares his experience willingly. The principal points he makes are:

● *Start with good cows.* Mr. Patrick believes in paying high prices—as a dirt farmer—for high-producing cows of the bloodlines he wants. In 1944, he purchased a pair of twin two-year-old heifers for $2,200, and a year later paid $1,500 for another two-year-old.

High as these prices were at the time, Mr. Patrick has no regrets for they became the foundation animals of his herd. He still has two, both of which are still sound cows in calf and high producers.

His present herd includes 50 top-producing cows and 20 young heifers. His Guernseys must produce a minimum of 9000 lbs of milk with 450 lbs. of fat during a 305-day lactation, milking twice daily, to stay in the herd.

Roy Patrick, who has had 32 years' experience in the Guernsey business, believes you will get out of dairying what you put into it —if you have good cows to begin with.

Show records of the Patrick Guernseys are impressive. In 1952, he took the grand cham-

Reprinted by permission from New Jersey Farm and Garden, Sea Isle City, New Jersey

pion male and female classes at the Maryland State Fair. The female of this pair won fourth place in 1952 and 1953 at the National Dairy Cattle Congress in Waterloo, Iowa. The same female again placed first at the New Jersey Guernsey Show at Trenton in 1952.

As early as 1845, a scientist succeeded in grafting a tomato stalk on a potato stem, and growing a plant with tomatoes above and potatoes below. It can be done, but it's hardly worth the trouble.

In 1950, Roy Patrick's home-raised bull, Quinton Maxim's Kale, took first place at Trenton and at the Eastern States Exposition at Springfield. This same bull later was sold to the New Jersey Cooperative Breeding Unit at Clinton, where he still remains.

● *Provide good care for cows.* A cow's production, he reiterates, depends upon the care she receives during the freshening period two months prior to calving and the one month after calving. He feeds a commercial dry cow grain mixture at the rate of one pound for each 100 pounds live weight.

Roy Patrick stays with his cows during calving, and has his springing cows bedded in box stalls that are dry and clean. Soon after calving, he gives a bucket of warm water to the cow. He says the water lessens the danger of a retained placenta.

He likes the stanchion form of stabling because he is able to give closer attention to his cows. They have more time to eat and, after milking, he is able to examine each one—something that would be difficult in other systems. Individual records are kept on each cow.

● *Have a good veterinarian and turn the medical program over to him.* Treat your "vet" like a family doctor and cooperate with him, says Roy. If he is to be at your farm at nine a.m., have your animals at the barn where they can be treated. Turn your cow records over to him, keep him informed, and follow the directions he gives you.

Mr. Patrick has his Guernseys tested annually for Bang's and tuberculosis. All calves are vaccinated at six months of age for Bang's by a veterinarian, and are tatooed in the ear with the day, month and year of the vaccination which is now standard procedure under law.

● *Take care of cow's feet.* At the Quinton Stock Farm, a hoof trimmer works on all cows annually. Mr. Patrick believes a well-trimmed hoof provides for stronger and straighter legs. The

animal walks easier and seldom becomes lame.

● *Produce a high quality milk.* Your own reputation is at stake when your bacteria count is high. No farm cluttered with odds and ends of machinery and with the cows wading through manure in the barn lot makes a good impression.

● *Produce high quality roughage for your own use.* Thirty acres of Buffalo alfalfa provide the hay consumed for Roy Patrick's Guernseys. It is sowed thick at a rate of 20 pounds per acre with a Brillion seeder so that individual plants are slender at cutting time.

Alfalfa is sprayed annually and fertilized with 1,000 pounds of 0-14-14 in February or March. This season, Mr. Patrick used 1,000 pounds of 5-10-10. His experience has been that first cutting alfalfa produced more milk when cured right; he reasons that the extra fertilizer makes for a greater crop.

One machine the farm could not do without is the hay crusher. Mr. Patrick says it shortens the curing period by 24 hours and enables him to save more leaves. With a hay crusher, the hay produced is of higher quality, and the cows like it better. He bales his hay.

He has tried grass silage several times, but prefers corn silage. He believes corn keeps a cow in good breeding and milking condition, and says he gets more milk with corn silage. He produces approximately 200 tons of silage from 15 acres to fill his two silos.

Orchard grass and Ladino clover provide the pasture. A mixture of 10 pounds orchard grass to two pounds Ladino is sowed with Balboa rye or Clinton oats as a nurse crop at a rate of 1½ to 2 bushels per acre.

There are about 750,000 Americans in mental hospitals. In fact, over half of our hospital facilities are occupied by mental patients.

The grass and clover mixture is mixed with fertilizer (500 pounds, 5-10-10 per acre) and spread early in the spring. The nurse crop is sowed after the fertilizer application. Rotational grazing is practiced, using six-acre plots, and 500 pounds of 5-10-10 per acre are applied annually to pastures.

● *Feed cows well.* Mr. Patrick feeds a commercial mixture at the rate of one pound for each four pounds of milk produced. Cows are given all the silage they will clean up, except during lush pasture, and all the hay they can eat three times daily. He says his commercial feed costs him $20 more per ton than a home

mix, and he figures his cows have to produce 300 pounds more milk annually to pay for this feed.

He can't see forcing a cow to eat more of a low quality feed by mixing molasses with it and grinding the mixture in an effort to fool the cow into eating more. He likes to avoid the inconvenience of home mixing, and feels his cows have a feed mixture they like and one that is good for them.

If all people living in the U. S. in trailers were gathered in one place, they would comprise our third largest city.

There is plenty of pasture on the Quinton farm. He wants enough grass so he can shift his cows before they eat too much on one plot. He believes he has more grass by not grazing one plot so long that the grass has a hard time regrowing.

● *Raise only the best calves from your own herd as replacements.* Only the very best calves are kept by Mr. Patrick, and the remainder are sold for non-breeding purposes. Mr. Patrick doesn't buy young stock for replacements from outside. He says the risk is too great. "If you keep only the very best calves and give them the best of care, a dairyman does not need to worry about selling his best cows—all will be the best.

● *Take good care of calves.* Mr. Patrick believes in treating the calves like the future cows they are. He says their value depends upon their care as calves. At birth, they receive colostrum milk and have their navel treated with tincture of iodine solution. They are on a nurse cow for four to six weeks, then gradually switched to a ration of clover-timothy hay supplemented with a commercial calf feed. Pasture is limited to small lots up to the age of six months, with plenty of dry feed available. Stalls are dry, warm and well ventilated.

● *Handle cows with care.* Milking time at the Quinton farm is regularly at 4:30 p.m. and five a.m. There is no rough handling of cows, and loud noises are eliminated.

● *Select the right bull.* Extra special care is taken by Mr. Patrick in selecting bulls for his herd. They must have the right bloodlines and come from a family whose daughters are mild tempered and milk well with the milking machine.

He investigates the bull's dam and her sisters, his sire and grandparents. No bull is purchased when poor animals have been uncovered in his bloodlines.

A line-breeding system is used, with the bull being several generations removed. He doesn't use

artificial insemination, as he wants to follow his own bloodlines.

There are about 4,000 known kinds of animals. The whale is the world's largest; the bat the smallest.

● *Have good equipment and keep it in good repair.* Mr. Patrick advises against excessive buying of equipment. Buy only what you need and select equipment that can do several jobs. Then keep your equipment in good operating condition.

● *Test soils annually.* Soil samples are taken annually from all fields on the farm for testing. The pH is maintained at levels of 6.5 to 7.0.

● *Treat help well.* Roy Patrick sees the time coming when farm workers are going to demand a 40-hour week. He believes that farm labor is going to become an ever-increasing problem. Being fair with your help and doing your share of the more unpleasant farm jobs makes for better relationships.

Mr. Patrick's hired man, Howard Starkey, has been employed on the farm for 22 years. He is married and occupies a house on the Patrick farm.

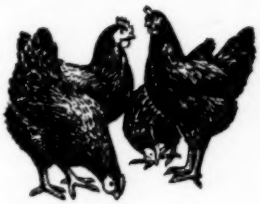
● *Keep in close touch with agricultural service organizations.* Mrs. Patrick is an active partner in the purebred business. She likes cows and has the ability to pick top producers. Mr. Patrick believes she is a definite asset to him in his business, and says it would be hard to get along without her help. He also believes that the farm home should have the conveniences of modern-day living—dairy farming should not become a drudgery.

What are your chances of having a corn picker accident? If you are a safe operator and never take any chances with machinery, your chances are one in a million. If you are an average operator who takes an occasional chance, you have 1 chance in 25. If you are a careless operator, you have a 50-50 chance of becoming a statistic.

Roy Patrick started from scratch in 1925. What he has done he feels any man can do if he will depend upon good breeding, feeding, management and sanitation—and if he adheres to the one principle which has made the Quinton Stock Farm what it is today—"Whatever the economics, there is always a place for a *good* cow!"

He might have added: There is always a place for a *good* manager!

Forced to Grow Broilers, He Likes It



A retired sailor makes a quick success as a poultryman . . .

Condensed from American Poultry Journal

John C. Brown

THE day that Mr. L. Davenport retired from the United States Navy, after serving 20 years, he never dreamed that a year or so lated he would be growing broilers. But fate sometimes does strange things to future plans. Such was the case with Davenport.

He had intended to return to Mississippi with his wife, find himself a job, settle down, and live the life of a civilian.

Just one thing went wrong, with his plans. He couldn't get a job. Everywhere he applied he was too old. It was hard to believe that a man just 40 years of age would be told he was too old to be hired.

His pension wasn't sufficient to keep him and his wife in the manner in which they wanted to live, so there was just one solution left. This was to go into business for himself. But what business could one enter on the limited amount of capital he had saved? After looking around, he decided the broiler business afforded him the best opportunity.

After cashing in some of his bonds and scraping together what other money he had, he built a 225 ft. x 40 ft. slat type broiler house, on some land he had bought at Tupelo, Miss. The house cost him $3,800. Allowing 1 sq. ft. of floor space per bird, he was in business growing 9,000 broilers.

Now, one year later, he has built another slat type house 250 x 40 ft. in which he grows 21,000 broilers. And his goal is to have housing capacity for 60,000 birds within the next 5 years.

No Difficulty, Now Getting Credit

When he wanted to build his first house, he tried to borrow some of the money necessary to build it. Never having had any experience raising chickens before, he was refused a loan by all those he applied to. But now,

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after more than a year of success in growing broilers and by showing that he intends to keep growing broilers profitably, such is no longer the case.

The slat type houses Davenport has are of a type only recently introduced into Mississippi. They have dirt floors and metal roofs. Both houses are of pole type construction.

His new house differs from the first in that the slats are hinged in two sections. During warm weather, they can be raised to allow full circulation of air. During the winter months, they are closed, and bags are fastened over the windward side of the building to keep the house warmer.

Both houses are equipped with mechanical feeders. There is 990 ft. of feeder trough in the newer building and 42 8-ft waterers. Brooding is done with gas brooders, using propane and butane gases. Grit is fed throughout the growing period. Birds are vaccinated for Newcastle and bronchitis at 4 days of age. Twenty-two 60 watt light bulbs are used in each building to furnish all-night lights.

His houses are kept in very good order. There is never a thing out of place; everything is in perfect operating condition, and houses and equipment are kept clean. He says it's not hard to keep things ship shape and that the only reason everyone doesn't have broiler houses as orderly and clean as his is that most people are too lazy to keep them that way. He also cleans out the litter after each brood.

Although fate changed Davenport's original plans, one can't help but sense he is happy with the change. He has come a long way in a short space of time and no doubt will reach his goal of 60,000 capacity within the next 5 years.

Topdressing Alfalfa Will Improve Yields

If you fail to topdress alfalfa, you run the risk of low yields.

Agronomists say lack of topdressing can mean low alfalfa yields. Since alfalfa is a heavy user of nutrients, particularly of potash, a good stand depletes the available supply of potash in a year. Unless the supply is replenished, the yield will go down.

A good topdressing and management program keeps yields high, promotes vigorous growth, and gives longer lived stands. Use from 600 to 1,000 pounds per acre of an 0-10-20 borated fertilizer, or the equivalent, except where a soil test indicates otherwise.

—Virginia Polytechnic Institute

Dairy Ventilation

An expert answers some questions on a timely subject . . .

Condensed from Electricity On The Farm

R. L. Maddex, Michigan State University
Agricultural Engineer

Why should I, as a dairy farmer, be interested in dairy barn ventilation?

Dairy barn ventilation increases net profits. A good ventilation system reduces the respiratory troubles in animals and the number of veterinarian calls. It results in a more even milk production through the winter months. It reduces building maintenance costs and creates more pleasant working conditions.

What are specific reasons for ventilating?

A dairy stable can fluctuate from warm temperatures and high humidities to cold temperatures during the winter season. The dairy animal produces about 3000 BTUs of heat per hour for every 1000 pounds of animal weight. In addition she gives off two gallons of water a day from her breath. Unless proper controls can be provided in the dairy stable, the high humidity and warm temperatures frequently cause respiratory troubles, particularly in calves. High humidities cause animals to be nervous and go off feed resulting in fluctuating milk production. High humidities and warm temperatures result in moisture condensation on ceiling and sidewalls. Over a period of time this moisture condensation can cause rotting of timbers and paint failures in a building. Dairy stable odors and unpleasant working conditions for the farm operator also result in non-ventilated dairy stables.

What are ideal conditions for cow comfort?

Laboratory studies show that maximum cow comfort and milk production results at tempera-

Reprinted by permission from Electricity on The Farm, 305 East 45th Street, New York 17

tures between 45° and 55° with humidities below 75%. Actual milk production is almost constant over a temperature range of 40° to 60° with humidities of 75% or below.

Electric motors transfer about 90% of their electrical current into power — steam engines transfer about 20% of energy of fuel into power.

What are the basic requirements?

The most important single factor in a ventilation system is a supply of fresh clean air without drafts. The actual ventilation system is comprised of fresh air inlets, a fan and motor for exhausting the foul air from the stable, an exhaust opening and fresh air.

How much air is needed?

Enough clean air is needed to remove the excess moisture and control temperatures. The actual amount of air needed for a particular dairy stable would depend upon the number of animals in the stable, the outside temperature at a particular time, the desired temperature inside the stable, and the heat loss through the stable wall. Since the daily climate varies even within a small locality, a maximum air flow is recommended generally with provisions for reducing the air flow on days when the temperature is lower. The recommended air flows in general range from 60 cubic feet per minute per 1000 pounds of animal in the most northern states to 200 cfm per animal in states south of the Great Lakes. Actual recommendation in cubic feet of air per thousand pounds of animal can be obtained from your state university, county extension office or electric power supplier in your area.

How should air be brought into the barn?

Ideally, the air should come into the dairy stable from all four sides at an even rate of flow. Practically, the air should be brought in through fresh air inlets distributed as evenly as possible around the stable. Avoid large openings such as doors, silo chutes, or hay chutes. The general recommendations of approximately 20 square inches of fresh air inlet per 1000 pounds of animal is standard throughout most of the northern states. This 20 square inches of inlet may be in the form of cracks along the wall, slots in the haymow floor, holes in the haymow floor of approximately one inch in diameter or through rectangular inlets in the barn wall. The slot along the haymow floor is generally a continuous slot except for large openings. Approximately 25 one-inch diameter holes are recom-

mended per 1000 pounds of animal if this method is used.

Where should the exhaust fan be located?

The general recommendation for the location of the exhaust fan varies with geographical areas, with the type of ventilation system, and with the dairy stable size. The recommendation most generally made would be to place the fan approximately midway in the long wall of the dairy stable away from prevailing winds. If more than one fan is used, the two fans could be placed side by side in most dairy stables. If the stable is extremely long, over 100 feet, the fans can be separated by about one-third the length of the stable and placed on the same wall. Another design system calls for the placement of fans on opposite walls.

A husband has figured that it costs some $300 per mile to push a super-market cart.

While there may be one best place for a fan or fans in dairy stable layout for the ventilation system chosen, there are other locations where the fan will provide very satisfactory ventilation. A person familiar with the design and workings of a ventilation system can help you locate a fan or fans. The fan should always be located in relation to the fresh air inlets.

Montana is about the same size as the United Kingdom, Belgium, and Netherlands combined.

How many fans do I need, and what kind?

The number of fans needed will depend upon the ventilation system design. In practically all systems for larger stables, two volumes of air are recommended. This can be obtained by having two fans, by having a two-volume fan with a motor-operated shutter controlled by a thermostat to reduce the volume of air flow as outside temperatures go down, or by a two-speed fan where the actual motor speed is reduced to reduce air flow. The propellor type fan is used in most ventilation systems although the squarrel-cage fan works satisfactorily if properly selected.

Do I need a fan shutter, hood and screen?

The purpose of the fan shutter is to protect against backdrafts and should be used with each fan. The screen should always be used. It provides protection for animals or humans against coming in contact with the fan and causing injury to the fan or to the person making contact. The hood is pri-

marily to prevent backdrafts that will affect the fan operation and is desirable.

What types of motor should be used?

A totally enclosed motor is recommended for ventilation systems since the motor is exposed to dust and moisture from the exhaust fan. Maintenance of the motor consists of keeping the unit fairly free from dust and moisture collection on the motor frame or cover and oiling according to manufacturer's instructions.

It has been estimated that 1 pair of pigs, with conditions ideal, could have 6½ million progeny in 10 years time.

What kind of controls work best?

A thermostat for controlling temperatures is used with the dairy ventilation system. The thermostat is a more reliable instrument and much cheaper than the humidistat which operates on the basis of the amount of moisture in the air. There are several makes on the market that are quite satisfactory. Generally a thermostat is recommended that will hold temperatures within 2° of that selected by the operator.

The thermostat for a one-fan unit or two fans located side by by side should be located in approximately the center of the dairy stable. It should be high enough so that it will not be directly in front of the cows and off center enough that it is not directly in line with the ventilating fan or fans. Likewise it is not desirable to locate the thermostat under a hay chute or some other opening that is likely to place it in a draft. When more than one fan is used and the fans are placed at separate locations in the stable, it is sometimes desirable to cross locate the thermostats so that there is some interlocking of the fan operation. A specific location can be suggested by the person installing your system.

Is special wiring needed?

Since the electric ventilation system is equipment that operates automatically without attendance, it is desirable to have this equipment on a circuit not used for other motors. The actual current demand of most ventilation fans will be below that of a 15 ampere fuse. It then becomes necessary to fuse the circuit according to the current requirements of the fan motor or motors if proper protection to the fan motor or motors is provided. Overload protection for each fan motor can also be provided by use of a fused type outlet and a time delay fuse rated at 1.25 times the current rating on the motor nameplate.

Is it necessary to insulate the dairy stable?

Controlling moisture in a dairy stable depends primarily on moving enough fresh air through the stable to remove excess moisture. As moisture is removed, heat is also removed. If a temperature of 45° is maintained in the dairy stable, the heat loss through the walls when outside temperatures are near 30° is not too great and satisfactory stable conditions can be maintained without insulating the walls. When outside temperatures go down to near zero or below the heat loss through the walls increases greatly. If the dairy stable is located in an area where low temperatures are likely to occur for several days or weeks continuously during the ventilating season, insulated walls are necessary. Recommendations for insulating the dairy stable walls are available in each locality through the agricultural extension office, electric power supplier, or state university.

What should I do about wet spots on walls?

Wet spots on walls or over pens can be overcome by providing fresh air inlets at this point. A calf pen for example can be a few degrees cooler than the rest of the barn if we provide fresh air without drafts in this area and maintain fairly even temperatures.

Can warm air be drawn to cold areas?

It is possible to design a ventilating system that will make use of the warm air from the dairy cow area of the stable to warm colder pen areas of the barn. There are problems involved however in preventing condensation of the moisture from the warm air on cold walls. A system of this type should be designed by someone well experienced in dairy barn ventilation. Generally the recommendation would be to remove the warm air from the stable at the point of heavy cow concentration and bring fresh air in through the colder areas of the barn.

Summary

There is more than one way to satisfactorily ventilate a dairy stable. The most important factor in ventilation is control of the fresh air supply.

The size of the dairy stable, the number of animals in the stable, the range of outside temperatures and the temperature maintained in the stable all affect the design of the ventilation system. Controlling temperature in the dairy stable controls the moisture. Correct wiring and fusing of the ventilating fans is important.

The best information for ventilation systems to fit a dairy stable can be obtained from authorities in the general locality where the stable is located.

Witloof Chicory at 79c a Pound

This gourmet vegetable, much of which is now being imported from Belgium, sells for an amazing price . . .

Condensed from American Vegetable Grower

F. C. Coulter

A WINTER vegetable that is much favored by expensive restaurants is strangely neglected by the average American. In restaurants it is known by the doubly inaccurate name of French Endive; in the produce trade, and generally, it is Witloof chicory.

That word Witloof (Witloef) tells the story: it means white leaf and is a Belgian name, so this is the white chicory from Belgium, where the idea of forcing blanched heads was developed about a century ago.

Growers in France and Holland, a few in England, and still fewer proportionately in this country have taken up this profitable crop, but the Belgians are easily the leaders both in technique and production, growing about 20,000 acres of this special variety of chicory, from which are forced some 50,000 tons of chicons, as the silvery white heads are called.

The U. S. annually imports 1 to 1½ million pounds, and they may be seen in winter at the principal city markets, neatly arranged in blue paper-lined boxes, from which they are retailed in stores at about 79 cents a pound. Though this excellent salad vegetable is far from new in America, it is little known in the average home. The demand is increasing, however, and such a premium-priced crop might well prove a profitable off-season crop for American growers.

Any soil suitable for carrots will do for Witloof but, as with carrots, it should not be high in nitrogen and should be well-supplied with phosphorus and potash. The Belgian technique is to sow the seed in early summer in rows 12 inches apart, which requires about 3 pounds of seed per acre, thinning the plants afterwards to 6 inches apart in the row. This tight spacing is done to get roots about 2 inches in diameter and weighing about 4 ounces, as only from this size can the best chicons be forced.

The growing plants are very free from pests and require a minimum of attention through

Reprinted by permission from American Vegetable Grower, Willoughby, Ohio

the summer. In late fall or early winter they are lifted with a plow to which a subsoil cutter has been attached so as to trim off the tail of the parsnip-like roots and leave them uniformly 8 inches long, the depth of the forcing beds.

The whole plants are then piled in the field, roots in, tops out, to rest and dry for four to six days. Then the leaves are lopped off half an inch from the crown of the root, so as not to damage the growing plant. Malformed roots and any showing the slightest sign of rot (Sclerotinia) are thrown aside.

Animal husbandmen say a good mixture for beef cattle is two parts of bone meal to one part of loose salt.

In the Belgian system the forcing beds are often outdoors and about 3 feet wide by 25 feet long. Sometimes they are in sheds and larger, but they are always 8 inches deep. Heating is usually by small stoves and buried hot water pipes, but electric soil heating cables are recognized as being more efficient and easier to regulate.

The roots are stood upright in the bed, close together, then covered with 4 inches of finely sieved, mellow soil with sand added, which is hosed until it sinks down between the roots. They are then covered with more of the same moderately moist soil to a depth of 8 inches. Great attention is paid to the composition of this layer, as its weight and structure affect the size and compactness of the heads. If it should be heavy, the heads will be smaller and tighter; if it should be lightened, as by the inclusion of peat moss, they will be larger and looser.

When the forcing is done outdoors, the beds are topped with a heavy blanket of straw over which curved sheets of corrugated iron are placed, forming a low roof just clear of the straw. These covers above the soil are, of course, not necessary when the forcing is done in sheds. A week later the heat is turned on, when the beds have settled down, and the soil is brought to 65°F. Lower temperatures mean slower forcing, and higher temperatures mean inferior quality and flavor in the chicons.

In about three weeks the heads are 6 to 7 inches long and after the bed has been allowed to cool, they must be lifted carefully and snapped from the roots with a twist. They are not washed, as this is likely to cause opening and discoloration, nor are they even wiped with a cloth lest they be slightly bruised, but the outer, soil-stained leaves are stripped off. They are then sized, graded,

and boxed. The discarded roots are used for stock feed, or sold to companies which roast and grind the chicory to powder for blending with coffee.

So much for the highly organized Belgian system. There are simpler methods of forcing, much depending on how soon it is desired to reach the market. One of the most successful of American growers was Herman Van Aken of Whitefish, Mont., who used no fuel heating at all. Instead, he covered his beds with 3½ feet of straw and chaff, which was lightly hosed so as to wet the straw without having water run into the soil covering the roots. The resulting fermentation produced temperatures around 60°F., even in the severe winters of northern Montana.

His beds were 5 feet wide in rough 60 x 20-foot sheds which protected them securely from rain or snow but little else. Good heads can actually be grown without any supplied heat, but the process is slow: if the roots are earthed over in the fall and insulated against frost, the heads will be ready in early spring. A cold frame can well be used for this.

Professional growers of Witloof give the closest attention to seed. Most of them raise their own, choosing for this purpose the very best heads from the forcing bed and setting them out in the field 2 to 3 feet apart.

Growers buying seed must be sure to get it from a reliable source, specifying that only the genuine Witloof must be supplied and not the old Magdeburg from which Witloof was developed.

Sorghum May Replace Corn in Dairy Ration

Dairymen are asking whether sorghum can be used in place of corn for dairy cattle, says G. A. Williams, Purdue University extension dairyman. The answer, he replies, is a qualified yes.

Grain sorghums, grown rather extensively this year in Indiana, resemble corn grain in composition and feeding value. The sorghums, like corn, contain about 70 per cent nitrogen-free extract which is largely starch. Most grain sorghums contain more protein than corn, but are lower in fat. Too, they generally are lower in vitamin A than corn.

Sorghum may replace 50 to 75 per cent of the corn in a dairy ration, Williams asserts. Crushing is preferrable to grinding. When ear corn is worth $1.30 a bushel, 100 pounds of grain sorghum is worth $2.33, according to the U.S.D.A.'s Agricultural Research Service.

—Purdue University

Factors To Consider When Buying Machinery

Should you buy a 6 foot or a 10 foot combine? Here's how to compare total costs . . .

Condensed from Nebraska Farmer

FARMERS should consider several factors when deciding what machinery to buy, Eldon Erickson, extension agricultural economist at the University of Nebraska, emphasizes.

If a farmer is debating between a large and a small combine he should decide whether he can increase his net income by spending his money for the larger combine or by purchasing the smaller combine and investing the difference in such items as fertilizer, livestock or other machinery.

The initial costs of the machines are not the only costs that should be compared.

Purchase price and average annual cost of a large machine may be more than that of a small machine. But the small machine will cost more in labor and power because it will take longer to harvest the crop.

Erickson suggests a rule-of-thumb method to determine costs of two machines. In his example he considered the cost of harvesting 150 acres by a 6-foot power take off combine and by a 10-foot self-propelled combine.

Fish do not know of the existence of the English Channel. Study of fish migrations shows that in their annual journey from the Atlantic into the North sea, fish still take the long route up the west coast of Ireland, round the north of Scotland and right down the British east coast, following by instinct the path taken by their ancestors many thousands of years ago when Britain was still part of the continent.

From Lilliput, London

The farmer could complete the harvest in 107 hours with the smaller combine compared to 68 hours with the larger machine. Erickson figures it costs $1.20 an hour to run the tractor.

This includes fuel, oil, depreciation, interest, repairs, taxes and insurance. Thus tractor power would cost $128.40 for the small

Reprinted by permission from Nebraska Farmer, Lincoln, Nebraska

combine and $47.60 for the large one.

Figuring the operator's labor at $1.25 an hour, labor costs $133.15 for the small machine and $85 for the large machine.

Another cost to be figured is the annual cost of the machine. Erickson estimates the annual cost to be 15 per cent of the purchase price. The small machine cost $1,800, so the annual cost is $270. The large combine cost $4,800 so the annual cost is $720.

Adding all these figures, Erickson finds the cost of harvesting 150 acres to be $532.15 with the 6-foot combine and $852.60 with the 10-foot combine.

He suggests farmers use the same type of analysis for all kinds of farm machinery. He says to estimate the annual cost for tractors and harvesting equipment at 15 per cent of the purchase price, and the annual cost for planting and tillage machinery at 10 per cent of the purchase price.

Forecasts Favorable Year Ahead for Fed Cattle

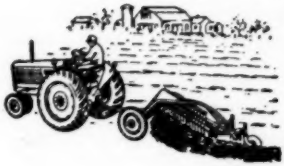
Farmers may get a dollar or two more per hundred pounds for fed cattle in the next 12 months than they did this past year if consumer buying power holds up, reports L. H. Simerl, University of Illinois farm economist.

Simerl pointed out that increasing pork production will compete with beef. But market supplies of pork will continue relatively light at least until about next October. Beef production leveled off this year and is expected to decline slightly in 1958.

Farmers in 13 leading cattle-feeding states had 11 per cent fewer cattle on feed on October 1 this year than last. It was the smallest number for this date in three years. Much of this reduction will apparently be reflected in fed cattle marketings during the next 60 days. Farmers have reported that they will sell 16 per cent fewer fed cattle in November and 12 per cent fewer in December than in 1956. These smaller supplies should provide strong resistance to the usual price declines at this time of year.

Judging from past history, Simerl cited these seasons in which cattle prices are most likely to be good: cows and utility steers, March to June; commercial and good steers and heifers, May to July; choice steers and heifers, July to October; and prime steers, September to January. —*Farm News*

Pelleting Hay Boosts Feed Value



Tests at an Illinois Station show pelleting hay can boost value $15.00 and more a ton . . .

Condensed from The Shorthorn World

George Cmarik, University of Illinois

PELLETED hay fed to steer calves was worth $15.69 a ton more than the same hay fed long or chopped in experiments at Illinois' Dixon Springs Experimental Station last winter. Steer calves fed pelleted hay gained 206 pounds over a 119-day feeding trial. Average daily gain for these calves was 1.7 pounds.

At the same time, similar calves fed long hay gained 75 pounds a head, on the average, and those fed chopped hay gained 74 pounds or an average daily gain of about .6 pound.

Calves fed the same forage put up as silage gained only 5½ pounds during the test. After 28 days on silage alone, these steers lost 48 pounds a head because they couldn't eat enough of the high-moisture silage. We had to add five pounds of chopped hay daily per head to get any gain at all, but the gains still were not satisfactory.

Pelleted hay is a highly concentrated feed, and the steer calves apparently liked to eat it. They ate an average of 15.7 pounds of the pellets a day. That's about 3.5 pounds more feed than you'd normally expect steers of their age and weight to eat. Every 15.7 pounds of pelleted hay contained 14.3 pounds of dry matter.

Steers on pelleted hay needed only 826 pounds of dry matter to put on 100 pounds of gain. The pellets produced 175 per cent more gain on 50 per cent more total feed eaten.

Steers on long and chopped hay ate 9.5 and 9.3 pounds of dry matter a day in 11 pounds of total feed. Dry-matter intake was about 1.5 pounds below recommended daily amounts. Steers on silage and hay ate 6.1 pounds of dry matter in 17.6 pounds of daily feed and barely maintained their weight.

The most important part of this trial to beef feeders, is the difference in cost of gains of the calves wintered on loose hay and

Reprinted by permission from The Shorthorn World, Chicago, Illinois

on pellets. With hay figured at $20 a ton and no charge for pelleting, steer gains on loose hay in this experiment cost 17.2 cents a pound compared with 9.1 cents a pound for gains on the pellets.

Feeders will have to add a pelleting charge to their cost if they pellet hay. That cost will vary with the situation and may in some cases be high enough to offset any pelleting advantage.

Pelleted feeds usually cost from two to three dollars more a ton than the same feed sold as a meal. Results of this experiment indicate that a ton of pellets is worth 104.5 more pounds of gain than one ton of the same hay either long or chopped. At a conservative price of $15.00 a hundred pounds for steer calves, this additional 104.5 pounds increase the value of the pelleted ground hay from $20 a ton to $35.68.

Included in this test were 60 steer calves from the grade whiteface herd on the Station, divided into four equal lots by weaning weights. A mixture of timothy and alfalfa was fed, the greater proportion being timothy. The silage was cut at the same time as the hay. It was from the same field, in alternate strips, and was ensiled in an upright concrete stave silo. All the hay was baled.

Meat-Type Boar

Tips on buying a meat-type boar are offered hog producers by Richard Hollandbeck, Purdue University specialist. A meat-type boar will sire market hogs that grade high "on-foot" and yield a better value to the consumer, Hollandbeck asserts.

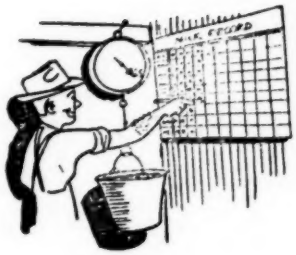
Here are some things to look for in a good boar:

Satisfactory length, not too extreme but longer than the market barrows a farmer expects to raise from the average sow herd. A good topline, trim underline, uniform width from front to rear, a well-sprung rib and width in his chest. Rugged bone, not coarse, and sound feet and legs set with one on each corner so he walks away straight with no "joint" in his back.

Commercial breeders needn't worry too much about breed, color, head and ear, according to Hollandbeck. It is well for a buyer to remember that a boar doesn't look masculine with a long, thin neck and narrow head.

If possible, a hog producer should buy a boar from a certified and uniformly good litter. Back-fat and growth date on the balance of the litter and on other pigs from the same sire will help in the selection, as will the feed conversion records. —*Farm News*

Planning Stall Barns for Efficient Dairying



Report on two mighty important research projects on the housing of dairy cattle . .

Condensed from
Guernsey Breeders' Journal

Professor F. W. Duffee,
University of Wisconsin

REDUCING the labor required to care for a dairy herd is probably the most talked about subject on a dairy farm today. Good farm help is scarce and wages are high, therefore dairymen are looking for ways and means to save labor as never before.

One of the first questions that usually comes up is whether to stick by the conventional stall type barn with its many improvements or to change over to loose housing.

In 1941, a research project was started at the University of Wisconsin, in cooperation with the United States Steel Corporation, designed to study the relative merits of the two systems and to learn how to plan and design a loose housing system for the northern or cold regions of the United States.

A few years later another research project was started by the University, in cooperation with the Wisconsin Utilities Association, to study the electrical mechanization of the dairy farmstead, including a study of the planning of the stall barn to determine what changes might be desirable to improve the barn, especially for the use of labor-saving equipment.

The study of the two systems of housing dairy cattle brought out the following advantages and disadvantages of each:

Stall Barns

It was found that there was greater comfort for the operator because most of the work in caring for the herd is done in the cow stable, and the temperature here is usually several degrees above freezing.

- It is easier to give individ-

Reprinted by permission from Guernsey Breeders' Journal, Peterborough, New Hampshire

ual care to the cows and the cows are in rows for exhibition to visitors, a feature especially appreciated by stockmen who are selling cows.

Examine your cow as soon as she is fresh for signs of udder trouble such as clots, strings or abnormal milk, advise Purdue veterinarians. These symptoms could be infectious mastitis. Any affected quarter should be milked dry four times daily. Early veterinary attention might save a quarter or the cow's life.

- Less bedding is required, and consequently there is less manure to handle.
- There are no boss cow problems, and dehorning is not necessary, although usually desirable.
- Farmers are more familiar with stall barns.
- It is easier for the veterinarian and easier to carry on controlled feeding.
- No additional heat is needed for the milking operation. Further, the stall barn system is generally more acceptable to milk sanitarians, although this usually can be corrected by an educational program with these people.
- Less total floor space under cover is needed in stall barns, but the cost per square foot of space is somewhat higher than for loose housing barns. The development of mechanical feeding for a stall barn should permit eliminating the feed alleys, which in turn would result in reducing the inside width of the barn by about six feet.

This represents a space reduction of nearly 18 per cent for the stall barn, and would mean that stall barns could be even smaller as compared to loose housing barns.

Loose Housing

Cows have more freedom, are more active and have a sharper appetite. Milk production will be about the same, but they will consume more roughage. The consumption of grain and concentrates is kept the same, and adjusted to milk production.

- There is greater flexibility in herd size for a given setup, and it may be easier and cheaper to add to the feeding and lounging areas providing the milking parlor and milkhouse are large enough.
- Manure handling is not a daily job, although the milking parlor must be cleaned daily and the feeding area and paved yard should be scraped every few days. There will be more total manure, because more bedding is used.
- As presently designed, it is easier to adopt self-feeding or

mechanized feeding, although some present developments in stall barns may change this relationship.

● Probably there will be somewhat fewer injuries. However, larger stalls in stall barns will greatly reduce injuries as has been definitely determined from research as well as farmer experience.

● Loose housing is more readily adaptable to the milking parlor method of milking where the operator can stand up while milking; also the first cost of a C.I.P. milking machine will be much less, and the cleaning cost will be less. The C.I.P. milking machine is the type where the milk flows through a sanitary pipeline directly from the cow to the can or bulk cooler, and the milk line is cleaned in place. A milking parlor may be used with a stall barn.

● It is easier to change the buildings over to another livestock enterprise.

● The investment in equipment is less for stanchions, gutter cleaners, ventilation, drinking cups, etc.

● Less labor is required in the loose housing setup as compared to present stall barns, but here again, developments that are taking place in stall barns tend to equalize this.

● Costs of a new stall barn as compared to a new loose housing barn are usually a little difficult to arrive at. There is frequently a difference in the type of construction; stall barns are usually built on a concrete foundation, are of high grade construction, and the stable walls must be insulated. On the other hand, loose housing sheds are frequently pole type construction, with preservative treated poles set in the ground, insulation is not used and is not necessary or desirable. It is too soon yet to determine the relative depreciation and maintenance costs of the two types of construction. Generally speaking, about 30 per cent more total housing space will be required for a loose housing system in the cold climates of the northern United States. This offsets to a considerable amount the cheaper construction that may be used.

● It is also desirable to have a larger paved barnyard for loose housing, especially where the silage is fed in the barnyard rather than in the feeding shed.

● A heating plant for the milking parlor is practically a "must" for the comfort of the operator, because it cannot be heated by the animals.

● Trouble is sometimes encountered when calves are born during very cold weather.

In the final analysis, the decision may well rest upon two or

three of these advantages or disadvantages, and the decision will be influenced by the climate of the area as well as the personal likes and dislikes of the operator. In the warm South, loose housing is indeed very popular; as one moves northward, the stall barn gains in favor on account of the greater comfort for the operator. One man has said, "Caring for a herd in a loose housing barn is a two pants job," meaning that you need to wear two pair of pants to keep warm.

Election day is early in November because, as the author of the election law said, in 1845: "Harvests are over, and the winter has not yet made the roads impassible."

The availability and cost of bedding may be an important factor, for if too little bedding is used in a loose housing system, the cows will get very dirty in the wintertime.

Wisconsin dairymen have had a chance to observe and study the loose housing system for the last 15 years. In a survey it was found that of the remodeling jobs done during the year of 1955, 91 per cent were stall barns and nine per cent loose housing. Of the new barns built, 85 per cent were stall barns and 15 per cent loose housing. In view of this preference for stall barns, the balance of this discussion will deal with this type.

A barn should be planned to save labor, produce quality milk, provide good working conditions, promote herd health, and to provide good and convenient storage for feed and bedding.

It should provide good efficient housing for the milk cows in stanchions, with adequate and proper pen space for the calves from birth to about 10 months, and maternity pens, all in the main barn. In herds up to 50 or 60 milk cows, it is desirable to have a feeding shed for the heifers adjacent to the main barn so they can be fed on the same chore route as the cows. They may be bedded in a separate shed. For herds larger than 50 or 60 cows it is usually desirable to feed and bed the heifers in a separate shed.

There are two separate phases to the problem. One phase is the planning of the barn itself, the other is the installation and use of laborsaving equipment.

The most important change in barn design developed at the Wisconsin Electric Research Farm is the use of larger stalls, which reduce injuries to legs and udder. Electric cow trainers which are quite inexpensive to install and operate must be used with large stalls, or the cows will be very

dirty. With them, cleaning or currying of the cows is practically eliminated.

The teats and lower sections of the udder should, of course, be washed before milking, and the hind quarters and tail should be clipped every month or so. The recommended stall sizes are given in the following table.

teat cost me $19.25. This is what put me wise. She was high cow in the barn at that time. I still have her, but that was too much and that is what started the ball rolling and, boy, that was the best investment I ever made . . . I'm 100 per cent for long cow stalls, cow trainers and deep wide gutters."

TABLE — Sizes of Cow Stalls — Using Electric Cow Trainers

Weight of Cow	Girth of Cow	Stanchion Stalls		Tie Stalls	
		Width	Length	Width	Length
800 lbs.	65"	3'-6"	4'-8"	4'-0"	5'-2"
1000 lbs.	70½"	3'-9"	5'-0"	4'-3"	5'-6"
1200 lbs.	75"	4'-0"	5'-4"	4'-6"	5'-10"
1400 lbs.	79½"	4'-3"	5'-8"	4'-9"	6'-2"
1600 lbs. and Over ..	84"+	4'-6"+	6'-0"	5'-0"	6'-6"

In a survey among farmers who had recently remodeled their barns and used large stalls, 84 per cent reported that the cows were cleaner with larger stalls and cow trainers, 10 per cent reported there was no difference in cleanliness, but half of these did not have trainers, and four per cent reported the cows were dirtier, but none of these had trainers, 93 per cent reported less teat and udder injuries. The contents on some of the questionnaires were especially interesting and tell the story more vividly than figures.

One man summed it up as follows: "I'm so completely satisfied that I wouldn't make any changes . . . I used to spend at least $150 to $200 a year for garget and smashed teats. One cow's

Another said: "My herd health and cleanliness have convinced me that the University of Wisconsin Electric Farm gave me the answer to my remodeling problem. I am grateful to that project and to the folks who worked with me."

When remodeling narrow barns it is possible to reduce the width of the center service alley (where the cows face out) to as little as 5'-0" if a barn cleaner is used and long stalls are used. In any case, the service alley need be no more than 6'-0" wide where a barn cleaner is used. This helps reduce the cost of a new barn, by saving in the total width of the barn. In some areas, milk ordinances may specify a wider service alley.

Flat bottom, sweep in mangers; location of the columns in line with the rear ends of the stall partitions; gutters 16" to 18" wide and 11" or 12" deep; and building the service alley floor level with the stall floor are other important changes.

The cost to manufacture, age, and bottle a gallon of whiskey is about $2.00. Taxes add from $10.00 to $13.50 to the wholesale price.

One item frequently overlooked in dairy barn planning is to allow for future expansion. The trend at present is toward larger herds, and unless the barn is planned correctly, expansion is difficult and results in an awkward plan. It is desirable to keep one end of the barn clear of outside structures, such as silos, then if planned properly an addition can be made.

It is desirable to have the milkhouse and silos all on the same side of the two-story barns, thus leaving the other side clear for setting up a blower or elevator to move hay into the barn. If they cannot be arranged this way, they should be staggered, with the milkhouse on one side of the barn and toward one end and the silos on the other end.

Silo rooms should be fairly large (10′ x 14′ is about the minimum) with provision for storing the grain ration and lime in this room. Make provision for easy unloading of the feed and lime into bins in the room.

It is desirable to build the silos at the corners of the feed room; if only one is built now, another can be added.

The milkhouse may be located on the side of the barn and at one end of the milk cow section for herds of 24 cows or less. If the herd is larger, the milkhouse should be located so that the passage from the barn to the milkhouse is at or near the middle of the milk cow section of the barn to reduce walking distances in carrying milk. If a C.I.P. milking machine is used, the location of the milkhouse is not so important, except in all cases, provision must be made so that the milk pick up truck can drive up to a convenient loading dock at the milkhouse.

Bulk milk coolers will probably become almost universal in the next few years, so it is important to build the milkhouse large enough for a bulk tank and allow for some expansion. It is much cheaper in the long run to build the milkhouse a little larger at this time than it is to enlarge it later on.

At the Electric Research Farm it has been found that three items of equipment save about one

hour of work a day for the 24-cow herd; this amounts to 18 ten-hour days in six months. The barn cleaner and silo unloader each save about 25 minutes a day, or about one minute per cow per day for each one. The cow trainers save about 10 minutes per day because of the elimination of cleaning cows. This, of course, will vary with the amount of bedding used and will also vary depending upon how clean the dairyman keeps his cows. Whatever time you spend cleaning cows will be practically eliminated if longer stalls and cow trainers are used.

Water bowls for the cows are a must for the good dairyman, and in stalls up to about 4′-0″ wide one bowl for every two cows is satisfactory; for wider stalls a bowl is required for each cow, otherwise she cannot reach it.

Some kind of ventilation is necessary to provide satisfactory conditions for the cows and to prevent rapid decay of the structure. Electric fans provide good controlled ventilation. There are various sizes of fans and various systems of installation, but in all cases drafts should be avoided and the distribution of intakes should be rather uniform to insure uniform conditions throughout the barn. The calf section of the barn is normally cold as compared to the cow section. It is therefore desirable to arrange the system so that one or more of the air outlets are in the calf section. This will mean that much of the warm barn air will move through the calf section before being exhausted, and thus raise the temperature for the calves. If the cow exit door is near or next to the calf pens, a partition wall can be built along side the exit and next to the calf pens to prevent cold drafts on the calves when the cows are moving into and out of the barn.

Deaths from all wars have been 1,130,393 people in 180 years. Deaths caused by autos in the past 55 years now number 1,149,819.

Remember that insulation of the barn wall is an absolute must if a good dry barn is desired.

It is absolutely impossible to ventilate a poorly insulated barn in the northern part of the United States, and keep it dry, and at the same time warm enough to prevent the water pipes and water bowls from freezing. In this connection, remember that a solid concrete wall has very little insulating value.

Some people argue about cold concrete floors for the cows. The facts are that the temperature of the ground under the concrete

floor is practically the same the year around, at the distance of about six feet from any outside wall. A 3" layer of sand or crushed rock under the concrete floor is good.

At the Electric Farm the manure is stacked during the winter months when it is difficult to haul to the field daily due to cold or snow.

Old-timers tell us that profanity has become colorless and not worth listening to since the mule has been replaced by the tractor.

When spring comes the manure is quickly and easily loaded on spreaders, hauled to the fields and plowed under. A shallow concrete manure pit open at one side will reduce loss of liquids. With this method the barn can be cleaned without going outside. This equipment gives very little trouble and saves about 20 per cent in time as compared to hauling the manure to the field every day.

American farmers generally have mechanized field work much faster than livestock chore work, as shown by recent statistics which reveal that the labor required to produce an acre of wheat, oats, corn and hay has been reduced tremendously since the coming of the tractor, but the labor to care for a dairy cow for a year has been reduced a very small amount. Using 1910-14 as a basis, the requirements now are 29 per cent as much labor for wheat, 39 per cent for oats, 37 per cent for corn and 55 per cent for hay. However it still requires about 92 per cent as much labor to take care of a cow as it did in 1910-14. In other words, on a relative basis it now takes less than half as much labor to produce an acre of the major crops of wheat, oats, corn and hay as it does to take care of a dairy cow for a year. Putting it another way, the dairyman receives about half as much per hour of labor when caring for dairy cows as he does when producing crops, compared to 1910-14.

A Texan has taken out a patent on a process for extracting a food preservative from hedge apples (Osage orange).

Most of the development of labor-saving equipment for dairy chore work has come since the end of World War II, and dairymen everywhere are accepting this equipment rapidly. Probably one of the greatest developments in agriculture during the next 10 to 20 years will be the mechanization of chore work.

Wisconsin Special Bulletin 4, PLANNING STALL BARNS, shows many plans for stall barns ranging in size from a 16-cow to a 59-cow barn; also complete detailed plans for calf stalls and pens, young stock housing, silo and feed rooms; and complete, easy to use tables which give standard data for every dimension in a stall barn. These tables and plans are all based on thorough trials and research at the Electric Research Farm as well as conferences with manufacturers of barn equipment. This bulletin may be obtained by writing to the Agricultural Mailing Room, University of Wisconsin, Madison, Wisconsin.

Piperazine Is the Best Hog Wormer

Piperazine is the best hog wormer we know of now, says Dr. Norman D. Levine of the University of Illinois.

Antibiotics used in treating infectious diseases are valueless in handling the large round hog worm. However, a new and different antibiotic has recently been introduced specifically for treating round worms. Studies are still being carried on to determine its effectiveness.

Piperazine occurs in many forms and derivatives. One form is about as good as another if you follow directions closely when worming your pigs.

The key to raising worm-free pigs is to farrow them under sanitary conditions and then keep them clean. Dr. Levine recommends the McLean county system of swine sanitation, which includes these steps:

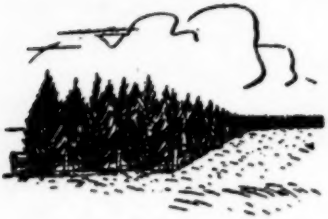
1. Put sows in farrowing pens that have been thoroughly cleaned.

2. Wash the sows' udders before you put them into the pens. Worm eggs are often found in the dirt clinging to the udder and may be passed on to pigs when they suckle.

3. Haul sows and litters to pasture rather than let them run down the same lane you have used year after year. The young pigs can easily pick up worm eggs from the dirt in the lane.

4. Use rotation pasture on ground that has not had pigs running on it for two previous years. —*Farm News*

"Wood Is My Best Farm Crop"



A Pennsylvania farmer used good forestry practices to turn brush land into a productive woodlot. Now he is reaping the harvest . . .

Condensed from Pennsylvania Farmer

Joseph A. Krivak

"MY SOCIAL SECURITY is on those hills." Those are the words of Harry Burrows, Erie County farmer. Harry isn't the largest woodlot owner in his section of Pennsylvania, but he is doing the best management job.

"Taking care of the woods," as Harry describes it, isn't something new. "When I took over the farm 32 years ago the entire area had just been cut over. At that time I owned the biggest brush patch of worthless trees in the county. Because trees covered most of the farm, I realized a large part of my income should come from wood products. You could say that the woodland on my farm has been under a management program since that day."

The Beginning

The first assistance received by Harry Burrows in developing a woodland plan was given by Arthur McIntyre in 1929. At that time, McIntyre was a forester working with Pennsylvania State University. Today as woodland conservationist with the Soil Conservation Service, McIntyre continues to take an active interest in the Burrows woodlot. Harry was one of the first cooperators of the Erie County Soil Conservation District in 1950.

"We didn't make much money those first few years," says Harry, "but it was soon evident that the potential value made our work worthwhile. The most common species when we started out were beech, elm and sugar maple. Even though beech isn't worth much it was better than nothing, so our original plan took this into account. Later when ash, cherry and basswood became established

There are more boys born than girls, but women still outnumber men. In all countries except India, they live longer.

Reprinted by permission from Pennsylvania Farmer, Harrisburg, Pennsylvania

we changed the management plan."

A Three-Man Operation

Looking over the woodlot one can readily see what this conservationist is talking about. Areas near the sugar house are almost pure stands of sugar maple. This arrangement makes for the most efficient running of the sugar bush. Areas managed for timber production have heavy stands of ash, cherry and sugar maple, the species that bring top stumpage prices.

The land in Imperial Valley, California, now world famous for productivity, was useless desert until irrigation was introduced.

"This isn't a large operation," he states, "all the work is done by myself and two men who were hired the year round. The three of us handle the work from the first whine of the power saw to delivery at the mill. Modern methods in our maple syrup operation have largely eliminated parttime help."

"Last week we took out a load of cherry logs," Harry relates. "They brought $300 a thousand at the mill. That's why we sell all saw logs by species. The ash goes to Albion, Pa., where it is made into boat oars, baseball bats and implement handles. Hard maple logs are sold to a small manufacturer of bowling pins, furniture stock and other maple specialty products in Corry. The remainder of the logs go to a local saw mill. The small amount of hemlock in the woods is used on the farm. The pulpwood is delivered to Hammermill Paper Company in Erie. All of these markets are within a 20-mile radius."

The woods operation is a year-around job. In the early spring maple syrup time keeps every one busy. In an average year, 1,000 gallons of syrup are packaged and sold. A new sugar house made the job easier this year. Oil-fired evaporators save time. Another innovation was the use of electric heating cord to prevent freezing in the exposed pipes feeding from the storage tanks to the evaporator. Freezing sap has always been a bane in syrup making.

After the sap buckets are laid away, saw logs are the next product taken out of the woods. "As our stand improves, we cut heavier each year," states Harry. "The quality of our saw logs shows us that woodland management has paid on this place. Our stump-

The population of some prairie dog colonies is thought to exceed 400 million. Some spread over 25 square miles of land.

age cut last year was 70,000 board feet. We expect a gradual increase in following years."

When the selective cutting of saw logs is finished the pulpwood operation goes into high gear. Harry has a contract with the Hammermill Paper Co. for 350 cords a year. Improvement cuttings, thinnings, and salvage from trees cut for timber furnish that amount.

The land not covered with trees supports a grassland farming program with 50 head of beef cattle and 150 sheep. Here again Harry has used the technical services available through the Erie County Soil Conservation District. Technicians of the Soil Conservation Service have assisted him in draining fields that were normally wet. Installation of a water disposal system took care of the surface water. A tiling system eliminated the seepage and springs.

Harry sums it all up this way: "A man gets a certain pride out of developing cutover brush land into a managed woodlot. There are a million and a half board feet of timber on those hills. As far as I'm concerned, wood has been the best crop on this farm."

Arsanilic Acid Boosts Gains

Hogs on drylot fed a ration containing arsanilic acid gained 10.6 per cent faster than hogs fed a ration containing none of the chemical, an experiment at Purdue University has shown.

The arsanilic acid, according to J. H. Conrad, swine nutrition specialist, was fed at the rate of 90 grams per ton.

The animals fed arsanilic acid consumed 314 pounds of feed per 100 pounds of gain. Feed costs were 10 cents cheaper per 100 pounds of gain for the pigs fed the arsanical.

A combination of arsanilic acid and aureomycin did not give results equal to arsanilic acid alone. The combination of arsanilic acid (45 grams per ton) and aureomycin (10 grams per ton) resulted in a 6.3 per cent increase in gains.

All hogs used in the experiment were fed ground corn (78 per cent) mixed with 22 per cent of Purdue Supplement 2 to make a 16 per cent protein ration. This was fed until the pigs weighed 100 pounds. A 14 per cent protein consisting of ground corn (84.5 per cent) and Purdue Supplement 2 (15.5 per cent) was fed from 100 pounds to a market weight of 200 pounds.

—Purdue University

More Acres or More Cows?

These dairymen found it more profitable to add cows . . .

Condensed from Breeder's Gazette

Wayne T. Messerly

THE "small" farmer is finding it increasingly difficult to keep operating at a profit. Put the blame where you will, but it looks like the small farmer either has to get more land or more livestock. For Floyd Hirsch, Polk Co., Ia., farmer who owns 180 acres, it was more cows.

Two years ago, Hirsch milked 9 cows and his milk checks netted only about $200 a month. Now he milks 17 cows and his gross milk check is $400 or more. Within a year, he'll have 32 cows in production, and he's hoping to net $600 to $700 a month.

The amazing thing about these figures is that Hirsch did this with only $4,500—not enough to even touch an Iowa farm! His new layout is neat, but isn't fancy. All he did was enlarge his loose housing area, improve his milk house, convert his stanchion area into a semi-milking parlor and increase his herd. However, it gets results, which is the important thing.

New Pole Barn Added

Under his old setup, Hirsch wintered 9 milk cows in a 9-stanchion cow barn in one end of a 30'x40' Gothic-type barn. He tried to house them loose in a 14'x70' shed that adjoined the barn, but it didn't work out. The barn was too narrow, and poorly ventilated. The cows developed respiratory troubles and fell off in production in winter.

His improvements and the cost:

(1) He replaced the old 10' x 12' milk house with a new concrete block milk house. This 14' x 18' milk house now adjoins the cow barn and cost $750. In addition, he spent $350 for a new 14-can milk cooler. A third milking unit cost $125. Miscellaneous expense, such as electric wiring, was $275.00.

(2) The most expensive item was a new 30' x 90' pole-type shed. It replaces the old shed

Reprinted by permission from Breeder's Gazette, Stockyards, Louisville 6, Kentucky

which was torn down. Lumber from the old shed was salvaged and re-used wherever possible in the new wing. Its cost was $3,000, boosting the total cost to $4,500.

The new pole-type barn is open to the East but is deep enough, 30', so that the herd is not affected by cold weather. Baled straw is stored in one end of the loafing shed, and is scattered for bedding as needed over the dirt floor. The other end of the shed at present is used for storing his combine. A ramp leads from the loafing shed into the cow barn so now the cows can go directly into the milking room from the loafing shed.

The milking room consists of 8 stanchions now; one was removed so a door could be made into the feed room.

Baled hay is fed outdoors in two large feed racks 200 days of the year. During the pasture season, the herd feeds on 20 acres of orchard grass and alfalfa, while 40 acres of alfalfa-brome is used for hay and a reserve pasture. Other cropland consists of 58 acres of corn, 12 acres of soybeans, and 17 acres of oats with new seeding.

The herd presently numbers 20 cows and first-year heifers, with 17 head in production. Because he culls close, it's a young herd, with 6 older cows (4 to 5 years of age), and 14 first-year heifers. Seven of these were bought as replacements, and he plans to buy about 10 more this summer, to get his herd up to 32 cows. Average cost of replacements has run $150 per head. While the herd is grade, he is upgrading with purebred sires.

Keeps DHIA Records

Before, dairying was only a sideline, so Hirsch did not keep official DHIA records. However, he has kept accurate records of feed costs and total milk sales over a 20-year period. In the past, his production per cow has averaged 13,000 lbs. of milk with a 3.75 butterfat test over a 305 day period. At $4.00 per hundred, the price he receives for his milk, this amounts to a gross income of $520 per cow. Feed costs over this period amount to $254 per cow. Thus, his feed return above feed costs is $266 per cow.

If you tell the truth, you don't need such a good memory.

Milking time is at 5 a.m. and 4:30 p.m. It takes about 20 minutes for each shift of 8 cows when 3 milk units are used, or 80 minutes for a herd of 32 cows. This includes grain feeding time, with each cow receiving this mixture twice a day:

Winter—1½ lbs. of 32% protein, 8 lbs. of ground ear corn and oats (10 bus. of oats to 40 bus. of corn); 2 ounces of minerals

force-fed; and salt free-choice. In addition each cow gets 30 lbs. of hay a day.

Summer—Except for the mineral and salt, this ration is cut in half and hay eliminated.

Improvements that may come about in the future are a pole-type hay shed to reduce labor requirements in storing and moving hay from the hay mow over the cow barn. The Hirsch farm may also see a bulk cooler and milking parlor, but probably not while the elder Hirsch is running the operation. That's because the creamery buying the Hirsch milk output is not yet equipped for bulk pickup. As for a milking parlor, Hirsch is satisfied with his present setup. It may take a few more minutes milking time, but he figures the savings in time wouldn't justify the extra cost.

Are Dairy Farmers "Over-Invested?"

Are dairy farmers "over-invested?" Is a reappraisal of buildings, equipment, and practices needed?

W. S. Griffith, Virginia dairy specialist, says the answers to both those questions may be "yes" if the results of some recent studies are considered.

For instance, a study of a group of Grade A dairy farms in Illinois showed the average investment per cow (in herds with 20 to 25 cows) was $517 at 1950 prices. With proper construction or remodeling, the buildings and equipment should have cost only $212 per cow.

On those dairy farms with 20 to 25 cows, dairy chores took about 119 man-hours per cow per year. With proper construction of the dairy plants, 67 man-hours per cow per year would do the job.

Research and years of experience have shown that three things are needed to produce high quality milk. First, good sanitation practices must be followed by the dairyman. Second, milk must be cooled promptly and adequately after milking. Third, all milking equipment must be kept scrupulously clean.

Regulatory agencies exist in every state to protect the public welfare. Dairy inspection is a vital part of the dairy business. Often, Griffith says, a lack of information has caused regulatory agencies to demand unnecessary restrictions on features of dairy buildings and equipment. —*VPI Newsletter*

Irrigation

Farmers in Nebraska have been digging irrigation wells like gophers—bringing real crop insurance to nearly a million acres in 5 years . . .

Condensed from The Furrow

F. E. Charles

WITH modern pumps and other equipment, Nebraskans have found what one of them described as guaranteed annual income.

"Once they get water, they're in business for sure. They have security," said John Friesen, well-digging farm equipment dealer at Geneva. "They can insure for hail, they can spray for insects, they can cultivate and treat weeds with chemicals, they can fertilize for high yields; and if they've got water, they just about have it made."

Like many others in the irrigation equipment business in most parts of Nebraska, Friesen should know what he's talking about. Land leveling, well digging, and buying irrigation equipment require a large investment—sometimes as high as $20,000 per farmer on large acreages. The best proof of this is the fact that bankers willingly lend money to meet the expenses of irrigation.

You can see why in individual farmer's results. Take Dave H. Epp of Henderson, York county. Here's his story in cold corn yields:

Year	Irrigated Corn (bu.)	Un-Irrigated Corn (bu.)
1954	70	25
1955	90	15
1956	100	0
1957	100	35

Epp has 200 acres of corn and milo and 60 acres in the soil bank. It cost him over $4,000 to level 140 acres and, he said, "well worth it for uniform water distribution." Leveling also doubled the value of Epp's land.

Mr. Epp uses his LP tractor for pumping. "I pump 90,000 gallons of water an hour for 30 cents," he explained. That's using 4 gallons of LP an hour at about 7 cents a gallon. When THE FURROW visited Epp's farm last July, his outfit had been pumping continuously for 124 hours and had a few more days to go.

Reprinted by permission from The Furrow, Moline, Illinois

Not Even Good Shucks

The experience of the O'Connor brothers, Ralph and Paul of Fillmore county, is about like that of Epp. Last year, their irrigated corn made 98 bushels an acre, but not even good shucks where un-irrigated. The O'Connors value their good dry land at $150 per acre, double that after being leveled, and drilled, piped, and powered for pump irrigation. They started river-pumping in 1954, subsequently dug several deep wells to reach land located too far from the stream.

Farmers and ranchers now can get both 5- and 10-year contracts for shelterbelt and wildlife habitat plantings to qualify for Soil Bank payments under the 1958 conservation reserve program.

You'll Pay for It Anyway

The voice of experience in the York Saline-Fillmore - Thayer county area shrieks this opinion about land leveling: If you don't level your land, you ought to, because you're paying for it but not getting the benefits.

And it can be added that this has been the experience in older irrigation areas for years and years. If soil conditions permit it, leveling pays for itself in better use of water, better stands of crops and, finally, higher yields of better quality.

It's that sort of thinking that has led Dave Broadwell of near York to level 260 acres. As a matter of fact, the Broadwell and Sons operation — around 1,400 acres — is big enough to justify purchase of a Hancock grader, rather than purchase custom leveling.

Until 1847, the person receiving a letter paid the postage — not the sender, and the rate up to 150 miles was 21 cents per sheet.

On 8-inch pumps, their tractor throws 60,000 gallons an hour for a fuel cost of 30.4 cents (2¼ gals. at 13½c). Broadwells dug four wells in 1956, three more in 1957. With seven wells and leveling completed, Broadwells will someday irrigate 755 acres. They use their tractors for pumping, to reduce investment in motors.

Herb Lauber of Geneva was one of the first farmers in the area to irrigate. He dug his first well by hand back in 1938. Since then, with the help of his two sons, Wendell and Clayton, he has added more wells and leveled land as rapidly as his hybrid seed business would allow. Mr. Lauber feels that irrigation is the chief reason he has a good business today to turn over to his sons.

Many Similar Experiences

You'd get similar stories from hundreds of farmers in this four-county area of southeastern Nebraska, because recent years have been devastatingly dry, and farmers were forced to dig for water —800 wells and 368 permits in York county, 600 in Fillmore, 350 in Thayer—and by 1958 even those 1957 figures will be out-of-date.

In Thayer, Fillmore, and York counties, 34,000 acres have been leveled for better irrigation, with surveying done on an additional 140,000 acres. This, of course, doesn't include flood and sprinkler irrigation of unleveled land of which there is an extensive acreage.

It's no wonder that Nebraska points to its more than 2,000,000 acres of irrigated cropland and says: "Talk about big business—that's irrigation in Nebraska!"

Plastic Pipe Good for Water Systems

Looking for a pipe for your farm water system that you can install yourself? A pipe that will resist rust and corrosion?

"Try plastic pipe," suggests Ted Welchert, extension agricultural engineer for the University of Arizona. Flexible polyethylene pipe is particularly adapted for use in outside water lines. It comes in coils from 100 to 400 feet and in sizes from ½ to 3 inches in diameter.

There are several grades of plastics and only the pipe marked with the National Sanitary Foundation (NSF) label should be used for drinking water.

In installing this flexible pipe, allowances must be made for expansion and contraction from changes in temperature. About 2 extra feet of pipe per 100 feet is the usual recommendation.

The equipment needed: only a hacksaw to cut the required lengths and a screw driver to tighten the clamps.

Though the installation is simpler than with galvanized pipe, certain precautions must be observed. Plastic pipe must not be laid on sharp rocks, and the bends should not be too sharp. Give risers plenty of support by wiring them to posts driven into the ground.

Plastic pipe is slightly more expensive than galvanized pipe of the same capacity. The extra initial cost, however, is offset by the longer life of the pipe and the savings on installation. In hard or salty water areas, especially, plastic pipe will outlast iron pipe by several years. —*University of Arizona*

Crown Vetch Controls Erosion

The time is coming when we will see it beautifying our roadsides and unsightly, eroded hills . . .

Condensed from Indiana Farmer's Guide

Fred Myers

THERE is a plant growing in Noble County, Indiana that may hold the answer to many erosion problems. It is Crown Vetch. The plant is relatively unknown in Indiana because it has never been grown in such abundance in any other part of the state.

There are two conflicting stories as to the coming of Crown Vetch to Noble County. The first says that a Sister at the Kneipp Springs Sanitarium, a Catholic institution located at Rome City, brought it from the eastern United States over 25 years ago and used it for ornamental purposes.

The second story states that a relative of the owners of a hotel in Rome City brought it from California about 1924 and planted it behind the hotel which has since been torn down. Not until the late 1940's when Milfred Richman of the Soil Conservation Service came to Noble County was a history of the plant established.

Prior experiments with Crown Vetch in Pennsylvania had proved that it could be a real erosion preventer. Richman decided to give it a try here in Indiana. He planted some of the vetch on steep highway cuts to see how it would grow. The plants were slow to establish themselves but eventually proved and are proving now their ability to hold soil.

The anatomy of the plant clearly shows why it has good soil-holding ability. It is a perennial with creeping stems, strong rootstalks, and a reclining habit of growth. The leaves are rather small. Long, thin seedpods and white to purple flowers can be found on the plant from June until September.

As the plant population increases and gets older, the underground stems get longer and tougher. The foliage is about one to two feet in height and can be lifted back to expose the many stems that form a layer on top of

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the ground. The underground stems go as far as 30 inches into the soil, and the stems on top of the ground reach a length of up to 10 feet.

Crown Vetch maintains its rich, green color throughout the summer and even after the first frosts. It usually turns brown and dies down considerably after the first snowfall. However, there is enough vegetation on the ground to prevent erosion during the winter months.

In North Dakota, a driverless tractor ran amuck, eluded five pursuing cars in an eight-mile chase through fields and farmyards before crashing into a shed. The runaway, dragging barbed wire and fence-posts, careened across ditches and county roads at eighteen miles an hour for two miles after throwing its driver.

The vetch can be grown in all sections of Indiana as it will stand both heat and cold. It evidently can stand cold weather better than hot weather. It has had its best growth on gravel and sandy-gravel soils since it favors a soil with high lime content. It is highly shade tolerant.

Pennsylvania State University has run several test plots on highway cuts in that state and has found it superior in almost every respect in retaining soil and soil moisture.

The plant can be propagated by seed, but there is one major drawback. The seed coat is very hard and all seed for planting must first be acid scarified in order to obtain a good stand. Most planting is done by vegetative means in spite of its cost.

Its uses as a roadside cover is encouraged, however, as it does not have to be mowed, has a pleasing appearance, and won't, because of its green foliage, pose a fire threat in hot dry weather.

Contrary to most growth habits of plants that have rhizomes, it does not seem to spread to cultivated areas. Plowing, in most cases, destroys the underground root system. Therefore, it appears that it can be used with little difficulty on slopes that border cultivated fields.

Many people have made a study of this plant and declare that it is the most promising erosion control to come along. Crown Vetch, like any other plant, has its disadvantages, but the time is probably coming when we will see much of it beautifying our roadways and unsightly eroded hills.

Fury of The Fire Ant

A new pest is one of the most conspicuous nuisances ever to threaten all types of U. S. farmers . . .

Condensed from Farm and Ranch

Allen Rankin

A FORMIDABLE army of South American fire ants is invading the United States. Hitchhiking, most of the way, on boats, cars, trucks and trains—they already have captured much of the Deep South's best farmlands, gardens and lawns, and are eating their way northward and westward. Their onslaught, if unchecked, may not stop short of California, Maine or Canada. Cold weather doesn't seem to be an absolute barrier to them.

The fire ant is one of the most conspicuous nuisances ever to threaten *all types of* U.S. farmers and the citizenry at large. With the fiery sting that gives it its name, its legions rout field hands trying to gather row crops like potatoes, strawberries and cotton. They then proceed to cause some damage to practically all edible plants by feeding on or sucking the juice from their roots, stems, seed and tender shoots.

Only one-quarter inch long, the fire ant wallops its victims with both ends at once: It first chews a slit in the skin, then jackknifes forward its abdomen and plunges its stinger into the open wound. Standing on its head and using this vantage as a pivot, the ant may then whirl around and sink the stinger into several additional sites, each time injecting a squirt of fiery venom.

On land they claim for their own, fire ants erect huge fortlike mounds, from a foot to a yard high and often only a few feet apart. These slow down mechanical harvesting, for the cutting blades of mowers and combines strike the mounds and clog or break. When farmers try to clean or repair the blades, the ants viciously assault them. Some Southerners say that these insatiable pests can kill newborn calves and pigs dropped near their mounds. They may chase brooding hens from the nests and kill their chicks, or they prey on the eggs and young of quail and other ground-nesting birds.

Reprinted by permission from Farm and Ranch, 318 Murfreesboro Road, Nashville, Tennessee

Ordinarily, the fire ant sting brings only searing momentary pain, commonly followed by small, pimple-like pustules that last three to 10 days. But people over-sensitive to their venom may feel immediate, sharp chest pains and nausea, start gasping for breath, turn blue in the face and lapse into a coma. Usually, such drastic reactions last from four to six hours. The sting is rarely fatal, however. And, lest unwarranted fear of the invader get out of proportion to the facts, entomologists remind us that stings of common bees and wasps can have the same violent effects on persons allergic to them.

Federal Aid is a system of taking money from you by taxation, then giving part of it back to you as a gift.

The real threat of the new pest's "bite" is primarily economic. The ant has spread so phenomenally that it now constitutes a national menace. In Alabama, hardest-hit state, battalions have cost farmers and other home owners an estimated 25 million dollars. "At the present rate of advance," warns State Commissioner of Agriculture A. W. Todd, "they'll soon be doing 100 million dollars a year damage in this one state alone!"

The ant armies, entrenched in only 20 counties in three states in 1949, now teem over 157 counties in nine states. They have their tightest grip on Alabama, Mississippi, southern Louisiana and western Florida. But they've established themselves in east Texas, Arkansas and North and South Carolina. Their destructive ramparts rise on more than 27 million U.S. acres. And they have proved that by burrowing deeper they can thrive at subzero temperatures.

Why haven't we taken action against them sooner? Emory D. Burgess, director of the USDA's Research Service, Plant Pest Control Division, puts it this way: "Too often, a new pest is a little like an oncoming appendicitis. Nobody gets very excited until it really starts hurting."

Probably, the first imported ants sneaked into the country about 1918 from a South American fruit boat docked at Mobile. In the mid-1920's, both state and federal entomologists spotted a few fire ant mounds in south Mobile County and sounded the alarm. In 1937, when the ants flared up briefly in the potato fields of adjoining Baldwin County, they were partially knocked out with poisons in limited pilot experiments.

The pests seemed to die down for a few years, but actually were

tunnelling into new areas, laying millions of "land mines." Then, in the fall of 1956, nature suddenly triggered the big explosion. A. W. Dale, operator of a medium-size cattle ranch in Montgomery County, Ala., gaped in amazement while ugly yellow mounds 18 inches high erupted over his entire farm. At first they popped up at the rate of two or three an acre, but during the rainy spring of 1957 the mounds increased to 20 . . . 50 . . . 100 per acre!

"But this is incredible!" Dale protested. "There's hardly a spot where a cow can lie down without touching an ant hill. And," he added, pointing to the lumpy, yellow, no-man's land his once-green pastures had become, "I can't harvest my hay. Who can run machinery over this?"

Dale learned it would cost him $2,800 to rid his 360 acres of the pests for even a three-year period. A few miles away Julian Elgin, a cattleman with 3,000 acres in pasture, blinked at the same eruptions and received a greater shock. "It will cost me more than $20,000 to push the ants off my place," he said. "And I haven't got that kind of money."

Why the dramatic upsurge of this plague after 38 years of limited trouble? W. A. Ruffin, Extension Entomologist at the Alabama Polytechnic Institute and a leading authority on the subject, believes that years of warm, dry weather helped the pest conceal its spread. Fire ants apparently build their high, telltale mounds to trap the sun's warmth in very cold winters, and to provide themselves with a dry retreat when excessive rains flood their underground chambers. In many areas, the ants may have been well established but unnoticed until heavy rains in 1956 and 1957 caused them to push their mounds conspicuously high.

The United States Government still owns 21% of all land in the U. S., and 98% of the land in Alaska.

In addition to 25,000 sexually immature female workers, each full-size fire ant colony has an "air force" of about 250 winged queens, and even more winged males. Ant queens mate in flight and after the marital embrace (always fatal to the groom) each queen alights in a different spot, casts off her wings and founds a brand-new colony.

The wind may waft a fertilized queen for many miles. She is also given to hitchhiking, which may set her down in distant states. Wherever she finally lands, she digs a small underground chamber, and lays her eggs.

Queens from a single colony can produce 250 mounds containing roughly 6,200,000 stinging defenders. In another year (ants reproduce in the spring), these in turn can create more than a billion and a half new queens, who *really* get the astronomical multiplication process going.

The chimney swift has been clocked as a speed of 250 miles per hour, making it the fastest bird known.

Thus far, cattlemen, with their widespread pastures, have suffered most from the onslaught. In Alabama, for example, many beefgrowers who pay a top rent of $5 an acre for grazing land, now pay an additional $1 an acre per year for fire ant control. Should the invader get as fierce a hold on Texas, damage might be many times as great—since it usually requires many more acres to feed a cow in much of Texas than in the Southeast. And if machine-busting ant mounds get started in the vast wheat and corn fields of the Mid-west — almost totally dependent on mechanized farming—the results could be disastrous.

Some things, however, are being done to make the picture brighter. The fire ant is easier to hit with poisons than some other pests. He can be wiped off any given plot immediately—and may be held off for three years—with a single application of any of three deadly compounds—chlordane, dieldrin or heptachlor. Two major plans for federal aid to ant-stricken areas have been proposed: That teams of experts from USDA's Pest Control Branch personally blast the ants at strategic points, and that each landowner fight his own chemical war, with Uncle Sam footing a percentage of the bill. Meanwhile, USDA's Burgess says: "It is important for everyone in a threatened area to work together, for if you kill the ants on your place and your neighbor does not, you've got ants right back again as soon as your poison wears off."

With federal and state entomologists supplying the technical know-how, many communities are taking such a stand. When fire ant "scouts" appeared in North Carolina recently, alerted farmers gave the ants such a reception that they were eradicated.

Cattleman Dale, of Alabama, is typical of thousands of aroused antfighters. Dale tied a crude, homemade scraper to a tractor and knocked down every fire ant fortress on his ranch. He then dusted poison mixed with fertilizer over every foot of his 360 acres. There's not a mound—and probably not a single ant—left on Dale's farm.

Since ant poisons may remain effective for three years, farmers unable to treat all their land at once can do it on the "installment plan" — one-third of their acres each year — provided they treat all their land within three years.

In spite of such promising first stands, the blunt fact is that no insect pest has ever been entirely wiped out, for any chemical attack thorough and widespread enough to kill every "bad" bug, would also kill every good one. Bees alone, without whose vital pollinating services many crops could not exist, do more good than fire ants do harm.

Early this summer three investigators, sent by the state of Alabama to Argentina to see what the ants' native South America thinks about them, returned deflated. API's able Dr. Kirby Hays, who had made the trip with two legislators, explained: South America is grateful to its fire ants—because they help kill and fight off a lot of tropical insects (including bigger and fiercer ants) that are worse then they are.

As far as the United States is concerned, if history repeats itself, nature will eventually be on our side.

"Because," says API's insect-wise Ruffin, "after any new pest explodes into a major infestation, it tends to level off. Natural predators learn to feed on it. Diseases chop down its too-thick populations. But," he added with a fighting gleam in his eyes, "we're not going to wait for nature. No insect has ever taken the country away from us yet, and this one's not going to set a precedent!"

Christopher Columbus Had Eight Little Pigs

On his second voyage, Admiral (of the Ocean Sea) Christopher Columbus brought eight pigs to the New World. These first pigs on this Hemisphere multiplied—and how!

Quoting early Spanish authorities, Captain Richard J. Morrisey tells the story. In the past quarterly journal of the Agricultural History Society, he also credits Columbus as among the first to understand the need to grow food for the colonial Americans. Later Spanish governors followed the policies he started.

From the beginning made possible by Columbus, Spanish hog growers in the West Indies furnished the pork which made possible the conquests of Mexico and Peru. One writer claims the hog was even more important than the horse to those expeditions. It "contributed to a degree that defies exaggeration."

ONE YEAR CONTINUING INDEX

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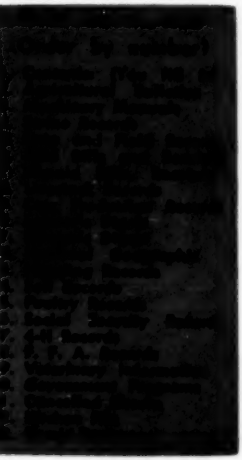

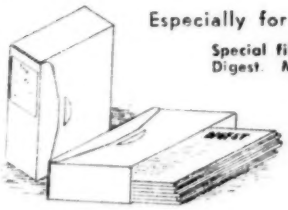

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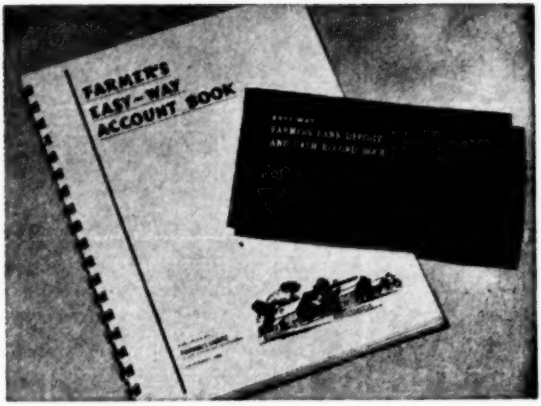

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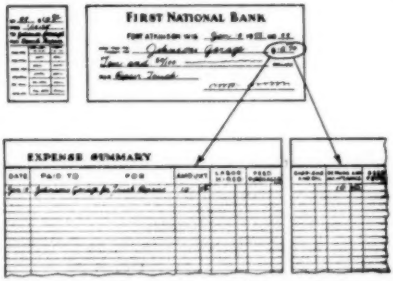

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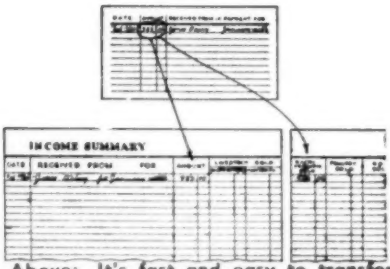

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